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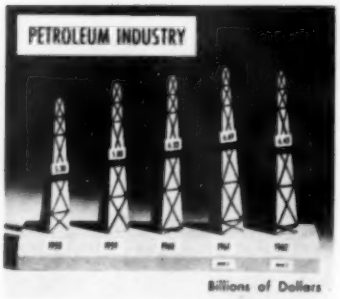
PETROLEUM WEEK

A McGRAW-HILL PUBLICATION



Oil plans another record capital spending year in 1961—$6.7-billion 19

Habits hinder cost-cutting in finding, producing oil . . 32

Management help is needed for process safety 85

Special Report:

The industry's average top boss is a technical man who made it the hard way 50

Price 50 Cents

UNIV MICROFILMS INC
EDITORIAL DEPT
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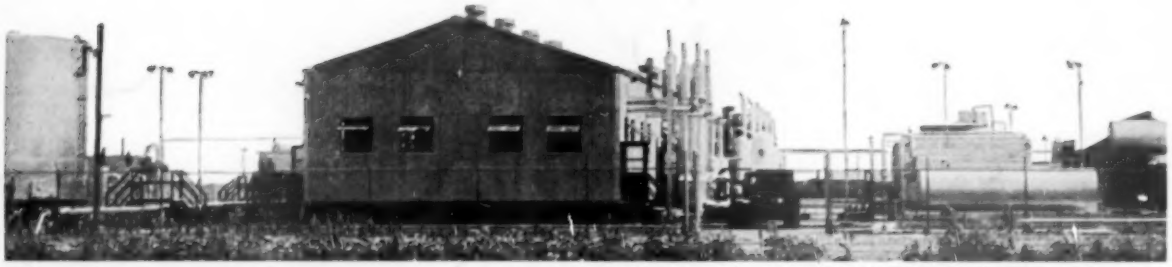
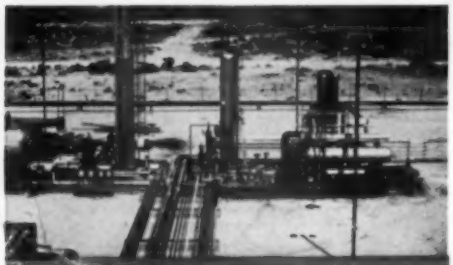
from drawing board to installation . . .

Southwest

specializes in TURNKEY operations



Southwest designed, engineered and installed this prefabricated water pumping station for a Pan American Petroleum Corporation unitized water-flooding operation in Southwest Texas.



This packaged, mechanical refrigeration type natural gasoline plant was built by Southwest on a turnkey contract that included complete process, design, and installation engineering for a major oil company in West Texas.

This barge-mounted compressor station, including delivery section facilities and incorporating 1600 h.p. of compression in four units, is utilized in offshore gas boosting transmission sales for the GATC Gypsy at Grand Isle, La.

In main line boosting for a major gas transmission company along the Texas Gulf Coast is this compressor station of four 660 h.p. packaged integral compressors, built complete on a common skidmount.

Southwest incorporates engineered, pre-fabricated methods to install unitized facilities — *quicker and cheaper* — for the oil, gas and chemical industries on a turnkey basis. All are API-ASME code constructed.

Southwest's competent staff of mechanical, chemical and civil engineers—all registered as professional engineers with years of experience in this type work—can complete your project months ahead of field-constructed plants. Complete flexibility also enables Southwest to construct to your engineering requirements or to offer custom-designed plants FOB our shops for installation by others.

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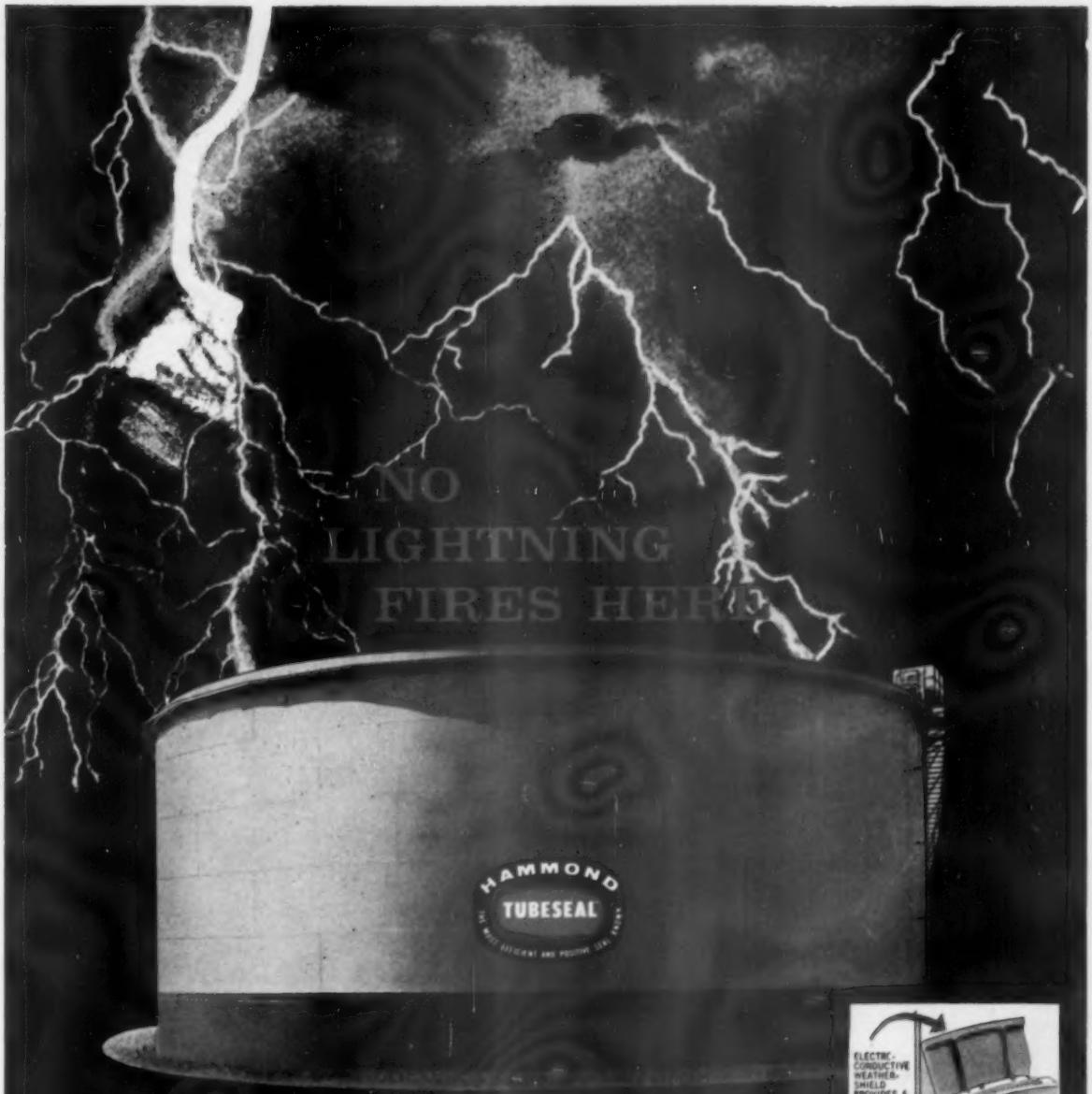
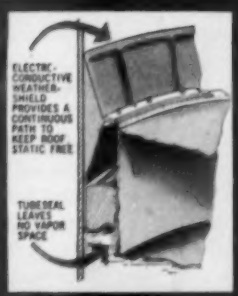
Also designers, manufacturers and constructors of Packaged Compressors, Inert Gas Generators, CO_2 and H_2S Removal Units, H_2S Recovery Units and "Tenex" Exhaust Gas Injection Units.

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INSIDE *Slant*

A REWARD IS DUE

The strong third-quarter earnings are a reflection of the stabilization achieved in the oil industry.

But the sad part is that the stabilization had to be achieved by regulatory bodies, primarily the Texas Railroad Commission, and not by the integrated companies.

And who bore the brunt of the stabilization program? The producers, who supported the regulatory bodies and urged low producing rates.

But refiners kept on churning at excessive rates until the tight supply forced them to cut back—not by choice, but of necessity.

With this involuntary cutback came firmer product prices and the strong earnings.

But the producer, who bore the brunt of the stabilization effort, which still is being pushed, has no increased earnings to show for his efforts.

His only reward has been reduced allowables and lowered income.

Some companies have recognized that the producer should share in any market improvement.

Why shouldn't this feeling be unanimous, and the producer be granted a crude price increase, no matter how small?

LeRoy Menzing
Editor

A TALE OF TWO FLOODS

HOW TWO WATERFLOOD OPERATORS INCREASED

CASE NUMBER ONE

This major oil company, operating a shallow waterflood unit, was experiencing severe declines in some producing wells.

In 1956, five wells were fractured. Production increases were so encouraging that the fracturing program was continued. Results have been analyzed only through 1958, but recent experiences have been at least as good or better than earlier results.

During the three years under study, 52 producing wells were fractured by Dowell and 6-month tests were obtained.

Production before fracturing averaged 2.1 bopd for all 52 wells. Six months after fracturing, production averaged 19.5 bopd—an average increase of 17.4 bopd or a percentage increase of about 930 per cent.

In addition to the producing wells, many injection wells were also fractured so that increasing volumes of water could be handled with a minimum addition of wells and pumping equipment.

Three-month reports are available on 20 such injection wells. Before fracturing, the wells would take an average of 44 bwpd at line pressure. Three months after fracturing, they would take an average of 202 bwpd—a 4.6-fold increase.

No exact monetary value can be placed on this increase, but it is obvious that the system could handle more water without increases in equipment and power requirements.

CASE NUMBER TWO

This independent operator started flooding a Bartlesville sand pool that had been abandoned. The field

THE STORY AT A GLANCE

- Location – Eastern Kansas
- Operated by – a major oil company
- Number of fracture treatments – 52
- Average production per well before fracturing – 2.1 bopd
- Average production per well six months after fracturing – 19.5 bopd
- Average per cent increase in production – 930 per cent
- Approximate cost of all treatments – $27,000

was originally opened up in 1917 and had been depleted by primary methods.

Early in the flood, the operator found that conventional five-spot flooding of the central part of the pool did not yield economical production. A general policy was developed to inject water in the central part and drill producing wells around the periphery.

Apparently there was still considerable oil in place along the edges, but the relatively tight formation prevented profitable producing rates without fracturing.

In 1952, the first two fracturing treatments were performed. Results were so encouraging that a systematic program of drilling and fracturing was started. By

MORE IDEAS FROM DOWELL

TO HELP INCREASE PROFITS FROM SECONDARY RECOVERY

MAGNESIUM PELLETS

are often pumped into the formation before acidizing to heat the acid and melt away heavy hydrocarbons that might be blocking either injection or production. These treatments have proved remarkably successful.

ROCKSHOCK*

(Implosive formation treating service) is proving valuable both for formation cleaning and fracture initiation. It often makes possible the fracturing of formations that could not otherwise be fractured.

EZEFLO*

is a new Dowell surfactant. Available in bulk, it is especially useful for lowering water injection pressure. It is suitable for any use where an efficient, concentrated nonionic surfactant is indicated.

PROFITS WITH DOWELL STIMULATION SERVICES

THE STORY AT A GLANCE

- Location — **Eastern Kansas**
- Operated by — **an independent producer**
- Field had been abandoned before waterflood started
- Number of fracture treatments — **34**
- Cumulative production from fractured wells* — **866,512 barrels**
- Cost of fracturing* — **$25,828**
- Fracturing cost per barrel of oil — **3 cents**
- Fracturing cost as a percentage of total production cost — **less than two per cent**

*to December 31, 1959.

the end of 1959, 34 frac jobs had been performed at a total cost of approximately $25,828. All but a few of the earlier jobs were performed by Dowell.

Fracturing fluids, sizes of jobs and techniques were modernized and improved, as the program continued, to assure the operator of the greatest possible return on his investment.

Cumulative production from these wells totaled 866,512 barrels by the end of 1959. The net sales price of the oil was in excess of two million dollars. Cost of the fracturing treatments amounted to 3 cents per barrel of oil produced or less than two per cent of the total cost of producing the oil.

For this two per cent, the operator changed a flood that was headed for economic failure into an excellent financial success.

These field studies are just two more examples of how Dowell services can help operators improve production, keep down costs, improve profits and speed payout on investment.

You may run into a wide variety of problems in addition to oil production when you operate water disposal, gas injection or waterflood facilities. Your Dowell representative has a wide variety of services and products—both new and old—to help you solve your problems. A few examples are noted in the box below.

In addition to those services mentioned here, Dowell offers the Frac Guide*, the Acid Guide*, Cealment*, Corban* and Freflo* to help solve problems of secondary recovery. For more information on how Dowell can help you increase profits from your secondary recovery, pressure maintenance, water disposal or gas injection projects, **dial Dowell.** Dowell services and products are available from more than 150 offices and stations in the United States, Canada, Venezuela, Argentina and Germany. Dowell, Tulsa 1, Oklahoma. *Dowell Trademark

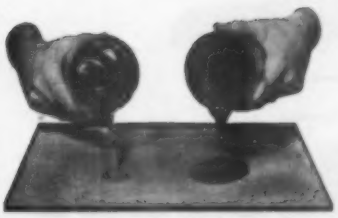
Services for the oil industry

DOWELL

DIVISION OF THE DOW CHEMICAL COMPANY

ABRASIJET*

(Dowell-developed abrasive jetting service) can be used to initiate fractures, perforate or clean the formation face. On injection or disposal wells the result is often a good increase in receptibility and/or a lower injection pressure. On producing wells, the results have been higher production, better gas/oil or oil/water ratios or improved results from fracturing or acidizing.



STABILIZED ACID

is regular acid with a special addition agent to prevent the deposition of gummy iron or aluminum hydroxides which might otherwise plug formation pores.

GYPSAN*

is a Dowell agent that is used to prevent formation plugging by water-formed gyp deposits. It is oil-insoluble and dissolves only gradually in water, thus providing months-long protection.

Congrats and $25 for this quip to J. B. VANDERGRIFT, Vandergrift Oil & Gas, Independent Producer, Pittsburgh, Pa.

You can "put this in your pipe and smoke it"... Lone Star casing, tubing and line pipe is the most popular in the industry ... because it is tough, dependable and available conveniently right in the middle of the oil country.

Made by the oil man's own steel mill, Lone Star API pipe is the specialty of the house ... where quality control is rigidly maintained for Joe Roughneck's personal satisfaction.

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Views That

Dear Sir:

PETROLEUM WEEK carried an article concerning Tuloma Gas Products Co.'s super-sized LP-gas transport, "Tuloma 'Jumboizing' Program" [PW—Sep.30 '60,p43]. However, your story was wrong.

Let me indicate some of the fallacies in your story that we found and that our competitors are continuing to point out. First: The size of the truck pictured is not 10,000-gal. capacity as you stated, but rather it has an 11,287-gal. water capacity. If you were taking LP-gas capacity, it would be foolish to fill the unit with just 10,000 gal. Even allowing for vapor, we can carry a larger payload than that. Either way, your caption is incorrect.

Moving down the story, you stated a special shorter cab was developed for the truck. This is absolutely not so. The GMC tilt cab is a standard item of equipment.

The truck's brand new, specially designed pump is not powered by the truck's battery. This is elementary. Actually, it is run by the engine, and a power take-off shaft with a telescoping linkage connects the truck and the trailer during unloading.

J. D. PERRYMAN, JR.
Advertising and public relations representative
Tuloma Gas Products Co.

Dear Sir:

Miss Wanda Jablonski pointed out in her article "The Issue: World Oil Price Dictation" [PW—Oct.21'60, p28] indirectly that Tariki is in the wrong. I say very bluntly that Miss Jablonski and whoever shares her opinion is wrong.

What Tariki represents is not, as she so eloquently pointed out, the "fiery director," but a nationalist jealous for his national wealth and one of the most outspoken Arab leaders in the field of petroleum. It seems very clear to me now that whenever we Arabs are accused as doing "wrong," it means that we are stepping on Western and American oil interests. It is right for both these groups that price cuts continue. But sure enough it is "wrong" from our side to yield to such cuts.

Not only did the article ridicule Tariki's point of view on "prices," but most unfortunately, it led a campaign of separate and rule between the Middle Eastern countries and Venezuela. Our alliance with Venezuela could only be interpreted as a realiza-

Make News

tion of our ideas to protect our national wealth.

In conclusion, this is my view: Our efforts to fight for survival will continue in a more vigorous uncompromising manner if the oil companies take a challenging view.

HASSAN YASSIN
Jeddah
Saudi Arabia

Dear Sir:

Your Inside Slant, "Thinking Is The Need" [PW—Oct.28'60,p3], is very appropriate.

FRANK S. KELLY, JR.
Independent producer
Shreveport, La.

"While I recognize that the [Texas Railroad] Commission has no authority over foreign imports or foreign commerce, nevertheless, it seems to me wise to point out that the present import program places an incentive on refining more oil than is needed to supply consumptive demand for products. Stated another way: The greater the throughput, the greater the quota. The President's Energy Committee recommended an import program that would aid and maintain a healthy domestic producing industry. I am wondering if a program that places an incentive on wasteful, excessive refinery throughput and builds excessive and wasteful product stocks, and which has kept Texas on eight days, serves this purpose. From the standpoint of the State of Texas, the participation of Texas' produced total national demand has drastically been decreased during the last five years."

—OLIN CULBERSON
Texas Railroad Commissioner

"The Canadian gas industry is young in years, but there is no question that it already has become one of Canada's major industries. In order to fulfill the export permits granted earlier this year, the industry will spend more than $650-million in plant, pipeline, and gas development.

—FRANK M. MCMAHON
President
Westcoast Transmission Co., Ltd.

PETROLEUM WEEK *will publish reader comments each week. Address letters to LeRoy Menzing, Editor,* PETROLEUM WEEK, *330 W. 42nd St., New York 36, N. Y.*

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Lone Star pipe . . like a precious jewel . . is a thing of beauty in its own field.

Its virtue lies in its flawless steel . . its artful finish by true steel craftsmen, and in the time-and-money-saving convenience of being available overnight right here in the great mid-continent oil and gas workshop.

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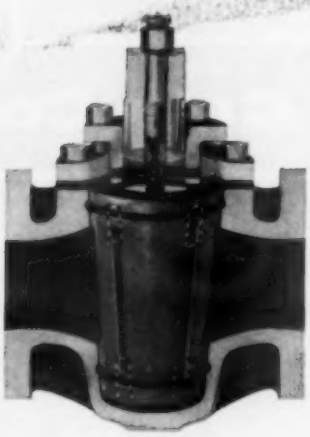
the idea:

Force Can Be Multiplied Through Hydraulics

Blaise Pascal in 1625 demonstrated that a given force can be multiplied almost infinitely through use of hydraulics. His principle: "a unit pressure applied to the liquid contained in a sealed vessel is transmitted to every part of the liquid with undiminished force, thus multiplying the force many times . . ."

the application:



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the benefits:

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For a full range of services, Rockwell-Nordstrom lubricated plug valves insure the trouble-free operation and freedom from wear and repair that you can only expect from a *lubricated* mechanism. See your supplier or write for complete details on Rockwell-Nordstrom lubricated plug valves, lubricants and operating accessories. Or better yet, have a Rockwell field engineer visit you. Rockwell Manufacturing Company, Dept. 96-L, Pittsburgh 8, Pa. Canadian Valve Licensee: Peacock Brothers Limited. If you live outside the U. S. or Canada, write: Rockwell International S.A., Geneva, Switzerland.

Lubrication Makes The Difference

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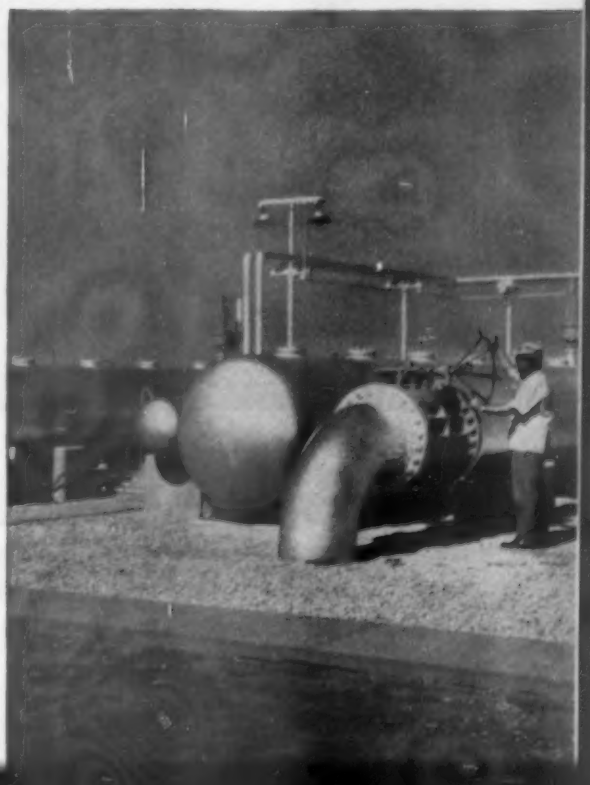

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*Manufactured under license from The National Supply Company.

If it's sold by J&L
It's the best available

Jones & Laughlin Supply Division works closely with producers throughout the United States and Canada. Our complete line of quality production equipment can handle your toughest production problems.

Highly versatile Axelson bottom hole pumps and sucker rods include the right pump and balanced sucker rod string for every well condition. With your local J&L Pump Shop standing by, you're assured of quick dependable maintenance.

J&L Grayloc Tubing* points the way to profitable production in multiple completions and high pressure wells. The alloy self-energizing sealing ring is secure against the highest well pressures yet encountered. For technical information on Grayloc, ask your local J&L Supply man for an illustrated brochure.

Your files should include a copy of our brochure on waterflooding and disposal. J&L engineers have the design experience and the equipment to provide outstanding service in secondary recovery and salt water disposal programs.

Performance proved Cabot Units are designed and built to give steady trouble-free service. Ask your J&L Supply man for Cabot Catalog 60 for complete information on this advanced line of beam balanced and crank balanced units.

For quality equipment, longer service, reduced final costs, call on your local J&L Supply man.

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BALL VALVE

with the Exclusive Rotating Seats

These valves handle the most abrasive and corrosive fluids—cannot freeze—cannot develop excessive body pressure; provide up-stream seating, double block and bleed, all with unbelievably easy operation.

They can be supplied in any material, size 2″ or larger to required working pressures and with any type or style of operator desired. The Cameron Ball Valves can be delivered from factories located in United States, Canada, Mexico, England and France.

CAMERON IRON WORKS, INC.—P. O. BOX 1212—HOUSTON, TEXAS

60-Second Summary / WHAT'S HAPPENING IN OIL

November 18, 1960

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The outgoing Eisenhower Administration may not follow through with the proposed changes in import rules. Interior officials, who will be replaced by Kennedy appointees, now hint that they may leave possible changes to their successors. . . . p. 29

•

Processors need better and less expensive instruments for analytical research. And they're hoping modern instrumentation will cut down use of specialized personnel. . . . p. 80

•

The petroleum industry is bullish on the outlook for 1961 and 1962. That's the indication from its plans for capital expenditures, which next year will run 5.6% ahead of the record outlays of 1960. Capital spending by all business next year will be down 3% from 1960. . . . p. 19

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Cutting costs in exploration, drilling, and production is largely a matter of changing old habits. A Tidewater Oil Co. vice-president told the API this week that "there is much more improvement possible" in affecting economies. . . . p. 32

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The average "big boss" in the oil industry is a college-trained man who made it to the top on ability alone. This is only one of the many findings of a Petroleum Week Special Report on the chief executive officers of the industry's top 25 companies—a thumbnail report on oil's most powerful leaders. . . . p. 50

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Every producing state should have a market-demand proration law, says R. M. Williams, Phillips Petroleum Co. He feels rule changes should be made, too, particularly with respect to allowable formulas. . . . p. 36

•

The success of refinery safety programs depends to a large extent on management cooperation. One expert says management's attitude can be a barrier to an adequate plan. . . . p. 85

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The National Oil Jobbers Council is torn between cooperating with the rest of the industry or striking out for "self-preservation." Those were the two courses of action offered at last week's annual meeting. . . . p. 106

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Drilling in Alaska next year is expected to climb 25% over 1960. That's the prediction of P. W. Gester, district exploration superintendent for California Standard. . . . p. 40

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Hunt International and British Petroleum are working out a deal to give BP an interest in Hunt's Libyan oil rights. Hunt will reportedly get 4-million bbl. of BP's Kuwait crude in return. . . . p. 93

Up to the Minute

SIGNIFICANT LATE NEWS

Competition in foreign marketing promises to become more intense as the result of consent decrees signed this week. The decrees were accepted by Standard Oil Co. (N.J.) and Gulf Oil Corp., whom the Justice Dept. describes as the "largest" defendants in the 1953 international "cartel" case.

The most significant development will be the dissolution of Standard-Vacuum Oil Co., a jointly owned Eastern Hemisphere affiliate of Jersey Standard and Socony Mobil Oil Co. The latter, along with Standard Oil Co. of California and Texaco Inc., is a defendant in the civil suit. But none of the three has agreed to accept consent decrees. The Justice Dept. is now expected to speed prosecution of those firms.

Stanvac's producing, refining, and marketing operations will be divided between its two parents. The division will be by broad regional areas—with some going entirely to Jersey, some to Socony, and some split between them. Jersey has three years to divest itself of the joint interest in Stanvac, except for a five-year deadline on the Japanese properties.

Gulf's consent decree requires it to make available up to 100,000 b/d of Kuwait crude for purchase by independents at posted prices. Gulf immediately said it would be "happy" to comply. No divestment of its overseas operation is required of Gulf. It owns Kuwait Oil Co., jointly with British Petroleum Co., which, along with the Shell group, was named in the original Justice Dept. complaint that alleged "conspiracy" for control of production, transportation, and marketing abroad.

Jersey Standard and Gulf are enjoined from participating in agreements that would cover "sharing or divisions" of foreign markets. Both Jersey and Gulf insist that the decrees do not constitute any admission of wrongdoing.

•

A snag has developed in the planned merger of the National Petroleum Assn. and the Western Petroleum Refiners Assn. The executive committees of the two groups, after a meeting in Chicago this week, decided that "further study of the advisability" of the merger is needed.

Texas will have a nine-day producing schedule in December, the first break in the eight-day limit in seven months. The initial allowable was set at 2,819,379 b/d, up 131,302 b/d over Nov. 12. The Texas Independent Producers & Royalty Owners Assn. had asked for the "highest allowable possible" consistent with supply-demand factors. Texaco, Sun, Mobil, Cities Service, and Atlantic favored nine days. Standard of Texas asked for ten, but Sinclair, Indiana Oil Purchasing, Phillips, Gulf, Shell, and Continental sought a continuation of the eight-day schedule.

•

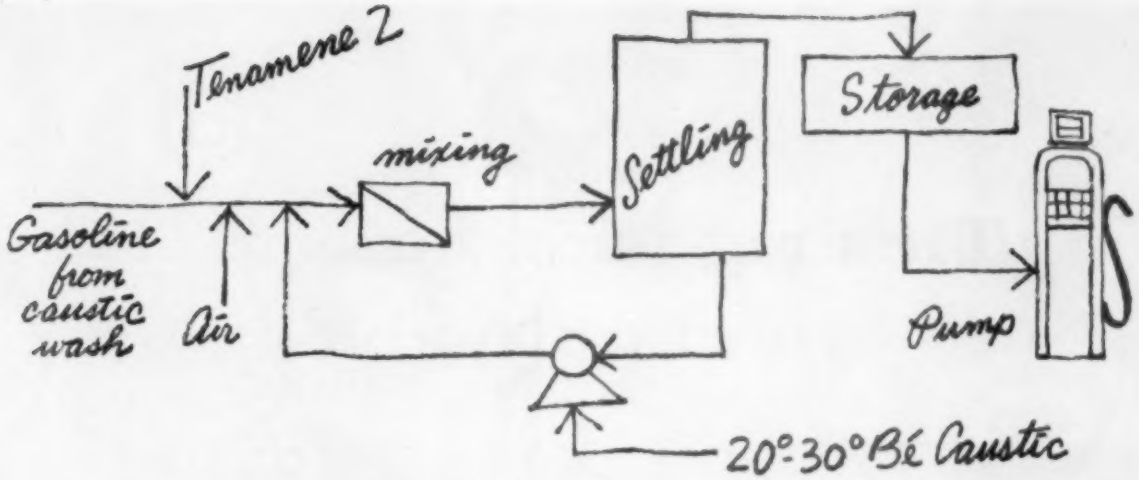
Producers generally favor Louisiana's new order, which will include an acreage factor in allowables for new pools. The order was issued to provide an incentive for wider spacing and deeper drilling, according to Conservation Commissioner James Gill. It supplements the depth-bracket schedule, the basic proration method in the state. Generally, the order provides bonus allowables for wells on more than 40 acres. The bonus amounts to half of the per-acre allowable for acreage over 40.

•

Residual import allocations for the first quarter of 1961 will average 530,000 b/d in Districts I-IV. The quota is 130,000 b/d less than actual imports in the like 1960 quarter, but 91,000 b/d above the first three months of 1957—the base year. Interior Dept. surprised the industry by not extending quotas to newcomers—the East Coast deepwater terminal operators who had been promised allocations.

•

A $350,000 research program to improve oil burners was approved by API's board this week. The program will be initiated in 1961 under the direction of the Marketing Division. The objectives of the program are to develop, interpret, and disseminate technical information that will assist manufacturers in providing improved burner equipment in the residential field. The API board also put the "homeless" agricultural program under the Marketing Division's wing. The old Agriculture Committee was dissolved, and a new committee and program will be established by the marketing group.



For gasoline stocks that respond, the economy and simplicity of Tenamene 2 inhibitor sweetening can seldom be equalled by any other treating method

In the presence of caustic and oxygen, Tenamene 2 catalyzes the conversion of mercaptans to disulfides. Being insoluble in caustic, it remains in the gasoline stream to effectively inhibit the formation of gum in the finished gasoline. Thus, it both sweetens and inhibits in essentially one operation.

Tenamene 2 inhibitor sweetening is primarily of interest to processors of catalytically-cracked gasoline. The response of such gasolines to the inhibitor sweetening method can be quickly determined by the following test:

1. Using sour gasoline from the primary caustic scrubber or mercaptan removal unit, put 700 ml. into each of several one-quart bottles.
2. To one group of samples, add Tenamene 2 at a rate of 5 pounds/1,000 bbls. (14.25 mg./liter). To another, add 10 pounds/1,000 bbls. (28.52 mg./liter).
3. Add 10 vol. % of 15° Baumé caustic to each sample.
4. Stopper the bottles, shake thoroughly. Replace stoppers with notched corks and store samples in a dark place at room temperature.
5. Examine at 3-hour intervals and determine the time required for sweetening.

If the results of this test indicate Tenamene 2 inhibitor sweetening to be effective in treating your sour gasoline, we will be glad to aid you in making a detailed study of your sweetening and stabilization requirements. In this study we will help you determine the optimum processing values for your particular operation, including inhibitor concentration, caustic strength and proportion, acid oil content, process temperature and reaction time. For an evaluation sample of Tenamene 2 and more information on the Tenamene 2 inhibitor sweetening method, write or call your Eastman representative, or write to Eastman Chemical Products, Inc., subsidiary of Eastman Kodak Company, Kingsport, Tennessee.

Basic Procedure for Tenamene 2 Inhibitor Sweetening
(see sketch)

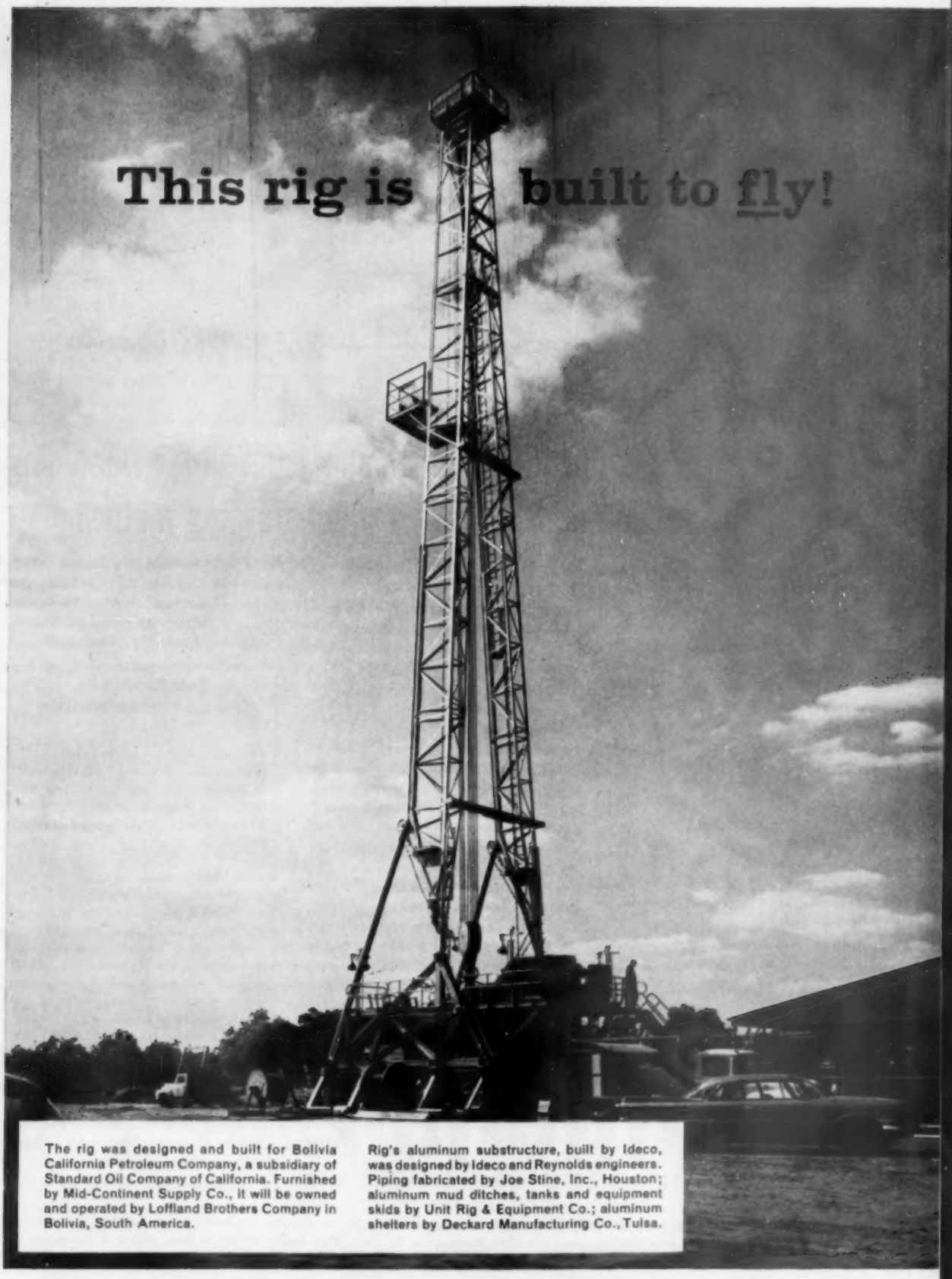
The sour gasoline is washed with 10-15° Baumé caustic. Between 5 and 15 pounds of Tenamene 2 is added per 1000 barrels of hydrocarbon. A small quantity of air is injected into the stream and the gasoline contacted with 20°-30° Baumé caustic. The gasoline is allowed to settle, then pumped to storage. If not already sweet when it goes to storage, the gasoline should sweeten within a few hours after storage.

Tenamene 2 inhibitor sweetening is, in almost every instance, more economical than doctor or copper chloride sweetening. Unlike doctor treating, no regeneration step is necessary, and there is no reduction in tetraethyl lead response. Unlike copper chloride treating, Tenamene 2 inhibitor sweetening does not allow the possibility of gum-catalyzing, copper contamination.

Most refineries find that minor modification of existing procedures enables them to adopt this method.

Tenamene 2
an Eastman gasoline additive

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tennessee; Atlanta; Boston; Chicago; Cincinnati; Cleveland; Detroit; Greensboro, North Carolina; Houston; Kansas City, Missouri; New York City; Philadelphia; St. Louis. **West Coast: Wilson & Geo. Meyer & Company,** San Francisco; Denver; Los Angeles; Phoenix; Salt Lake City; Seattle.



The rig was designed and built for Bolivia California Petroleum Company, a subsidiary of Standard Oil Company of California. Furnished by Mid-Continent Supply Co., it will be owned and operated by Loffland Brothers Company in Bolivia, South America.

Rig's aluminum substructure, built by Ideco, was designed by Ideco and Reynolds engineers. Piping fabricated by Joe Stine, Inc., Houston; aluminum mud ditches, tanks and equipment skids by Unit Rig & Equipment Co.; aluminum shelters by Deckard Manufacturing Co., Tulsa.

...made with strong, lightweight Reynolds Aluminum

The rig shown opposite is light enough to *fly*—and it will, by cargo plane or helicopter, to remote drilling sites in South America.

Light as it is, it can handle a 350,000 lb. hook load with a concurrent pipe setback load of 150,000 lbs. This new rig has a depth capacity of 15,000 ft. with 3½" drill pipe.

Explanation: Except for the mast, the major components of the rig are made with strong, lightweight Reynolds Aluminum. Reynolds supplied the aluminum and worked closely with the fabricators in designing this equipment.

The aluminum sub-structure, which saves 60% of the weight of an equivalent steel base, was designed by Ideco in close cooperation with Reynolds engineers. The crow's nest, handrails, finger board, racking platforms, and water and mud suction lines are also made of Reynolds Aluminum. Unit Rig & Equipment Co. fabricated the aluminum mud ditches, tanks, and equipment skids.

Thanks to its extensive use of Reynolds Aluminum and other special design features, the rig weighs less than 400,000 lbs.—about half as much as an equal conventional rig. This makes it practical for exploration teams to fly the rig in sections to drilling sites wherever they can land a cargo plane or helicopter.

And the Reynolds Aluminum in the rig will serve longer, with less maintenance, than steel. Aluminum resists corrosion from drilling muds; it won't rust.

The lightweight strength and corrosion resistance that Reynolds Aluminum adds to the air-borne drilling rig are paying important dividends throughout the petroleum industry—in drilling, refining, transportation, and marketing. And you can get immediate service, experienced technical assistance—as well as metal—from Reynolds.

For details on the new rig or on any use of aluminum, contact your local Reynolds office, or write *Reynolds Metals Company, Richmond 18, Virginia.*

Components of Reynolds Aluminum cut weight of this 15,000 ft. depth capacity rig in half, make it suitable for air transport to remote drill sites.

Note to Oil Field Equipment Manufacturers:

Initial material cost doesn't fully determine product end cost. Aluminum's light weight, ease of fabrication, and corrosion resistance often mean lower final costs. Contact the leader in developing aluminum applications for the oil industry—Reynolds. Call the Reynolds office nearest you or write *Reynolds Metals Company, P.O. Box 2346-CR, Richmond 18, Va.*

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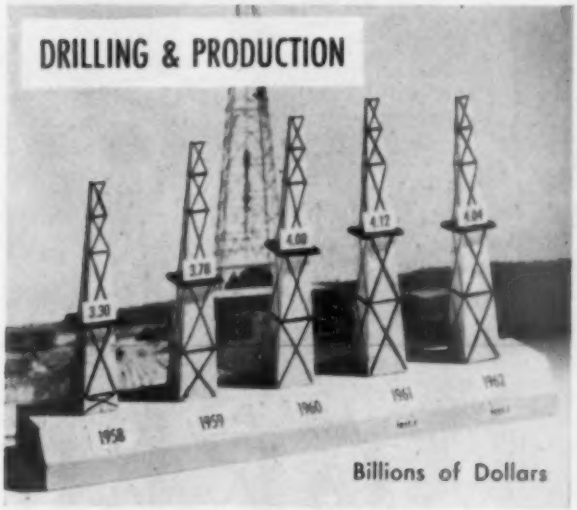
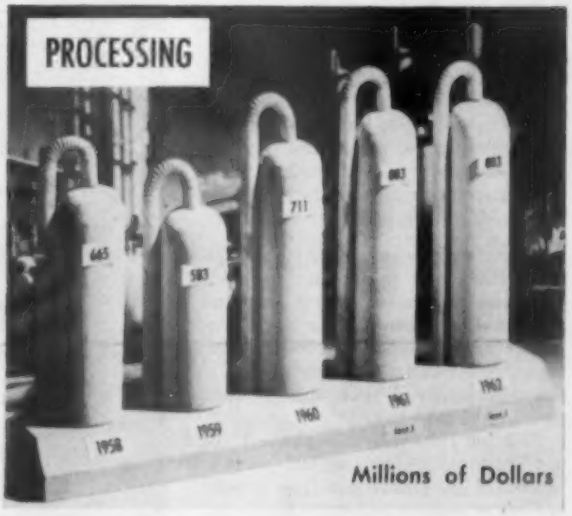
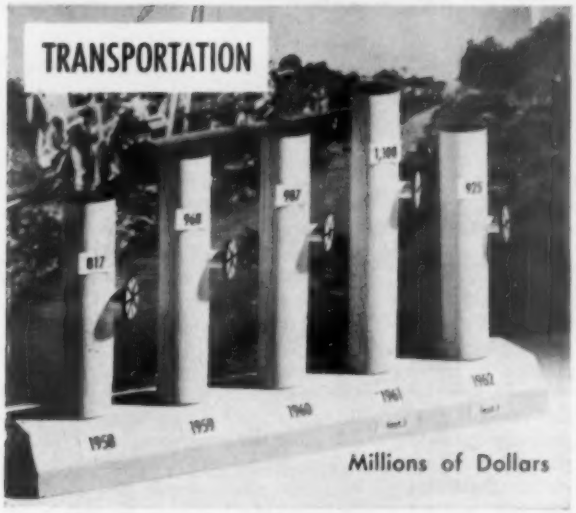






Spending Plans Reflect Good Outlook

The petroleum industry—with improved earnings, despite ample spare capacity—is budgeting a record capital spending program for 1961.

The now-planned outlays for drilling and new plants and equipment in the U.S. of $6,688,000,000 will follow the peak expenditures of $6,333,000,000 expected to be reached in 1960. The increase will be reflected in all branches of the industry (charts, above).

The latest survey of capital spending plans, made by McGraw-Hill's Economics Dept. just prior to the election, shows that the petroleum industry and business generally will spend less in 1960 than had been indicated last spring.

Oil's indicated outlays for 1960 are off 4% from what was planned last spring, while spending by business generally is placed at 4.8% below the April estimates.

Petroleum's spending plans for next year, now expected to be 5.6% above 1960, will run counter to the trend of the planned capital outlays by business generally.

For all business, the McGraw-Hill survey places capital outlays for 1961 at $35,070,000,000, a decrease of 3% from 1960 (chart, page 20).

One of the reasons behind the decline in spending plans expected for the next year by business generally is the decline in profit margins experienced in 1960. And the squeeze on profits also accounts for the lower rate of spending in 1960 than was indicated last spring.

Regardless of the decline in capital outlays for 1961, spending will still be at a high level, which indicates a strong prop for the general economy in the year ahead.

Manufacturing companies, for example, estimate that their 1961 sales will be up 3% over 1960 in physical volume.

Just what the election of a Demo-

cratic President will mean to capital spending plans is not known.

The survey reflects the thinking in industries at the end of October. Any changes in spending plans that may result from the election will be noticed in the more detailed survey to be made next spring.

It is significant to note, though, that in the immediate pre-election period, industries were planning on a high level of spending to carry through both 1961 and 1962.

In the petroleum industry, outlays for drilling and production in 1961 will show the most modest increase of all divisions—only 3%.

The increase to $4,122,000,000 for next year follows a 6% gain in 1960's expenditures in drilling and production over 1959.

And for 1962, the now-planned expenditures of $4,040,000,000 in this branch of the industry will be nearly as high as expected in 1961. Such preliminary planning for 1962 would indicate that the actual outlays in that year may run considerably higher than has been budgeted for 1961.

Surprisingly, the currently planned 1960 expenditures for drilling and production are 0.9% higher than was planned last spring.

The higher-than-planned spending in drilling and production this year reflects primarily the substantial increase in spending for production facilities.

These include more outlays for secondary recovery projects and investments in automated or semiautomated leases.

Both the number of holes and the footage drilled in 1960 will be below 1959. Current indications are that completions this year will run between 46,000 and 47,000 holes, for a total of approximately 195-million ft.

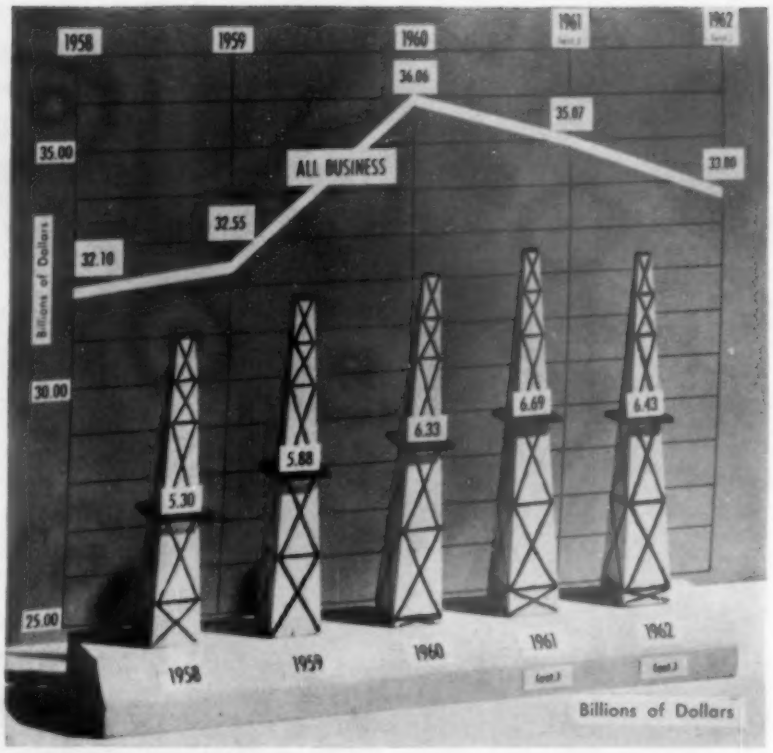
The downturn in drilling this year is a natural development after the excesses during 1952-57 when the industry drilled too many closely spaced holes.

In those six years, 318,213 holes were drilled, for an average of 53,036 per year.

The drilling and production outlook for 1961 is for a slight increase in drilling and a continuation of the trend toward adding more efficient equipment on leases.

Industry sources anticipate that slightly more than 47,000 holes will be drilled in 1961, totaling close to 200-million ft.

Spending for secondary recovery and pressure maintenance operations will continue at a fairly high level.



The largest increase in capital spending in both 1960 and 1961 will be made in the processing field, primarily investments in petrochemical facilities.

Oil companies report that their 1960 outlays for processing plants will amount to $711-million, 22% above their 1959 outlays, but nearly 10% less than they had planned to spend last spring.

Few, if any, of the projects that were contemplated last spring have been canceled; the ones not carried out this year are now scheduled for the 1961 budget. The outlays next year are placed at $803-million, up 12.9% over 1960. And for 1962, the now-anticipated outlays also amount to $803-million, which indicates that the strong growth of new petrochemical facilities will continue.

Included in the processors' spending programs for new facilities are substantial sums for modernization of existing units and replacement of obsolete facilities, both for crude-charging and for product-finishing.

Capital investments in new transportation facilities will also be up sharply next year, and will continue at a high level in 1962.

The planned spending for liquid and natural gas pipelines, tankers, barges, and rolling equipment is placed at $1,108,000,000 for 1961, up 12.3% over 1960. For 1962, the now anticipated spending totals $925-million.

A good part of the increase in transportation expenditures in 1961 will be accounted for by deferred projects that had been planned for 1960. That is especially true of main-line gas transmission facilities.

The original budgets for 1960 capital outlays had indicated that $1.2-billion would be spent this year. The $987-million now planned is 18.7% below the preliminary figure, but still 2% more than was spent in 1959.

The breakdown of expenditures between gas transmission and oil transportation of all types shows that $700-million will be spent on gas lines in 1960; $855-million is planned for 1961; $750-million is contemplated for 1962.

Oil transportation outlays will amount to $287-million this year, $253-million in 1961, and $175-million in 1962.

Expenditures for marketing facilities next year will total $567-million, up 6% over 1960.

The investments in capital equipment this year are expected to amount to $535-million, a 16% gain over 1959, and only slightly under the planned outlays that were indicated last spring.

There will be some growth in the number of retail outlets, primarily in the Midwest.

Generally, though, the increased outlays for marketing facilities are being made for modernization.

Kennedy's Changes Will Be Cautious

The incoming Democratic Administration's policies on oil and gas are not precise at this point—but the factors that will shape them are beginning to fall into place.

Such factors include President-elect John F. Kennedy's own programs, his regulatory plans, his appointments, and tax problems. High on the list, too, is the imminence of Lyndon B. Johnson, and his influence with a Congress filled with men of moderation.

As President, Kennedy will move cautiously on decisions that might injure a favorable business climate, despite his liberal philosophy.

His public and social programs will require money to finance them, and he hopes to get much of this through increased taxes stemming from a stimulated economy. Such an economy has little room for unemployment in oil fields of domestic producers or refineries of major importers.

Kennedy has alluded to raising taxes, if necessary, to pay for the programs he favors. He believes the economy is too soft to consider an early tax increase, however.

He does want to tighten certain tax "loopholes"—business expense deductions, dividends, and interest income. He also wants to study depletion in this light.

The President-elect is already taking steps to improve the efficiency of federal regulatory agencies.

Last week he named James M. Landis, former dean of the Harvard Law School, to make a study of the agencies. Landis will look at the Federal Power Commission, the Federal Trade Commission, and the Interstate Commerce Commission, among others.

A strong program of antitrust enforcement is planned.

But the Kennedy appointees will have to go far to equal the record of the Eisenhower Administration, in both the Justice Dept. and the Federal Trade Commission.

The character of antitrust enforcement at the Justice Dept. will reflect largely the views of the next Attorney General. But the men Kennedy is considering for the job will try to equal or top the GOP record.

The U.S. Supreme Court may undergo some changes during the Kennedy Administration.

By next March, three justices will be in their seventies. The court now has a five-man "conservative" bloc, opposed by four "liberals." But these are not firm alliances, and they shift frequently. Kennedy appointees would tend to support the "liberals."

On labor problems, Kennedy will be more receptive to the unions than was Eisenhower.

But experts don't expect a return to the Truman policy of kinship toward labor leaders. Kennedy is expected to be more standoffish, although he favors such labor goals as repeal of the Taft-Hartley provision that allows states to pass right-to-work laws.

Kennedy will try to get early congressional action on a higher minimum wage. He still wants $1.25 as a minimum and favors his bill, which would include increased coverage of service station employees.

Kennedy has plans to call a general labor-management conference to tackle automation problems in industry.

Highways and their financing will be an immediate problem for Kennedy.

The President-elect would prefer to dip into general revenues to bolster the highway fund in the future.

But he probably will seek continuation of the 1¢-per-gal. motor fuels tax scheduled to expire next year.

Increases in housing and military spending under Kennedy may add markets for natural gas and petroleum products.

Kennedy supports a 50% increase in housing starts, to 2-million units a year during the 1960s.

He favors a continuous, airborne alert of B-52 bombers—which would require more military purchases of fuel. One point of Kennedy's Army modernization plans may be inclusion of new diesel-burning tanks.

The success of Kennedy's ambitious programs will depend largely on how he deals with a middle-road Congress.

The Democratic-controlled Congress during the Eisenhower Administration was a moderate one, refusing to rock the boat.

After last week's elections, the GOP gained two Senate seats and a score of House positions. Congress next year is expected to look with a wary eye on any big spending programs unless it knows where the money is coming from.

One of the biggest fights involving the oil industry may be the coal-backed bid for a national fuels policy.

The coal lobby has served notice it intends to renew efforts to get a fuels study. And while campaigning this year in West Virginia, Kennedy promised that he would help revitalize the coal industry.

Soviets Like, Dislike U.S. Oil

Russia's reciprocal oil team wound up its month-long tour of the U.S. oil industry in New York last week with one big impression: inefficiency in the East Texas field.

"Our first reaction to Kilgore, Tex., was utter shock," said Stephan Ivanovich Kuvykin, head of the Soviet delegation. "We were surprised to see so many derricks so closely together—even in backyards.

"We have come to the conclusion that if it did not have to depend on individual property rights, the U.S. oil industry could be more efficient."

"In the Soviet Union," he added, "we draw up an over-all project for an entire oil-bearing area. We do all the research and then determine the drive scheme that best fits the field." Then, he noted, a research team, using computers, works out the method of drilling and spacing depending on porosity and permeability, and determines the grid. "We use either 500 by 800 meters (1,640 by 2,624 ft.) or 800 by 800."

U.S. oil men were quick to point out to the Russians the problem of protecting the many royalty owner rights in the field.

And they also noted that the way the field was originally developed was one of the factors that led to market-demand proration laws in the U.S.

The Soviets also estimated that their oil production would be "not less" than 250-million tons (5-million b/d by 1965). The original target was 240-million tons.

When pressed for a percentage of how much production would exceed the goals, he said, "8% or 9% would be reasonable."

The Soviet chief was impressed with the fact that each U.S. gas well has its own separator unit.

"We liked the manner in which gas is developed," he said. "Each well has a separator for gas, water, and gasoline. So far, a similar method is not used in the USSR. We bring gas from several wells to one point."

EARLY BIRD REGISTRANTS at API's 40th annual meeting in Chicago included (left to right) Frank H. Willibrand, Sohio Petroleum Co., Oklahoma City; A. O. Blasny, Tri-O-Lene Oil Co., Chicago; and Robert W. Grunert, South Penn-Pennzoil, Oil City, Pa.

Oil Men From Around the Country Made

OLD FRIENDS are Ralph Smith, of Dowell Division, Dow Chemical Co., Tulsa, and R. C. Tucker, president, Great Western Drilling Co., Midland, Tex.

JOHN E. SCHALK, Arapahoe Drilling Co., Denver, paused briefly for the camera.

HAPPY TRIOS included R. G. Luehes, C. G. Maxwell, and G. Ward Disbrow, Jr., all of Ashland Oil & Refining Co.

ANOTHER CHEERFUL GROUP included W. M. Buryn, A. L. Dowling, and R. A. Harang, all of M. W. Kellogg Co., New York.

CORRIDOR CHATTERS included Adm. O. P. Lattu, director, Military Petroleum Supply Agency, and R. E. Nelson, Amoco Trading Corp.

RELAXING is C. C. Naylor, Sun Oil Co., Marcus Hook.

the Trek to Chicago

TAKING TIME OUT from the busy whirl of meetings are M. E. Montrose, senior vice-president, and W. H. Siems, sales vice-president, of Hughes Tool Co., Houston.

LOOKING AROUND is Ted Sutter, president, of Baker Oil Tools, Los Angeles.

FIRST REGISTRANT T. E. Fisher, Palomar Oil & Refining, holds up No. 1 card.

OLDEST REGISTRANT was 90-year-old L. C. Wallach (right), of Sterns, Inc., New York and London, talking with T. E. Ward, Jr., Oilfield Equipment Co., New York.

Tight Economy Era Requires Realistic Oil

- **The industry's 'lush' days are over, and capacity growth will have to be held down for now.**
- **But the longer-run outlook continues bright—and spending is being planned for a worldwide upturn.**

Oil men were told this week that an era of a tight, rigid economy is here to stay.

That was the central theme expounded by most of the speakers at the 40th annual meeting of the American Petroleum Institute in Chicago.

Generally, the warnings were that "lush times" are not likely to return to the industry in the near future.

Jersey Standard's M. J. Rathbone was blunt in his advice: "Now it is absolutely vital that each of us think and operate as businessmen, examine our product patterns in the light of profits, and act on the basis of realistic market expectations."

Rathbone, chairman of the largest oil company and chairman of API, said that much of the oil industry's recent investment has been made on the basis of market expectations "which have not materialized."

Despite the continued surpluses in supply over the past three years, he noted, the industry has continued to develop, and to use unwisely, too much capacity in nearly all phases of the business.

"The incremental-cost theory may be reasonable under conditions of rapidly growing demand and a small margin of spare capacity," Rathbone said. "But neither of these conditions prevails today. By following the incremental-cost approach we have simply aggravated the downward price spiral."

Rathbone said the times demand that the industry hold down the level of its capital spending and be more selective and realistic in its investments.

Nevertheless, the industry is now planning record capital expenditures next year, totaling nearly $6.7-billion, a 5.6% increase over 1960 (page 19).

Rathbone noted that there is some evidence of a decline in the rate of additions to domestic refining capacity —a net of 70,000 b/d in 1960 compared with a postwar annual average of 325,000 b/d.

In refining, as in other branches of the industry, he said, there is no realistic justification for returning to the high level of investment in new capacity which has prevailed.

He observed that spare capacity in refining in the next few years will continue in "the same order of magnitude as the rate of 20% experienced in 1958."

The industry must gear its operations to an average growth in demand of 2.5% "as the best we can expect in the next few years," the Jersey Standard official said.

"Indeed, if slack business continues into the middle of next year, as some economists predict," Rathbone warned, "the 1961 gain will probably be less than 1%."

The point to note, he commented, is that while this slowing rate of growth has been evident for some time, "we have responded to it only belatedly and not enough."

In keeping with the slower rate of growth in demand, Rathbone urged that the producing branch of the industry give more attention to wider spacing of wells to recover more oil at lower cost.

State regulatory agencies have a "key responsibility" in this area, he said. "With constructive allocation formulas, operators will find it advantageous to develop reserves more efficiently at low cost and at a rate in keeping with current needs."

But a long-range optimistic view for a general upturn was voiced by E. D. Brockett, Jr., Gulf Oil Corp. president.

He predicted that worldwide supply will be in "reasonable balance within a period of five years."

Brockett noted, however, that this upturn would depend on such factors as political developments, "normal" growth patterns, and continued stability in petroleum production.

"We don't think the industry is in nearly as bad shape as the predicters of doom would have us believe," he observed.

He pointed out that forecasts for worldwide increases in demand add up to the fact that the industry probably will need to find an additional supply amounting to about 500,000 b/d of oil eventually—above and beyond the new reserves discovered in such places as Libya and Algeria.

Brockett said the industry can expect to resume its position of having a steady annual demand increase, but "possibly on a lower scale—maybe 2% to 3%."

"The indicators are very definite for this turn," he said. "I thing the situation in the U.S. is turning around a little bit."

Brockett credited the Texas Railroad Commission and its chairman, Ernest O. Thompson, for helping to stabilize production during "the very critical period last summer."

The Gulf president said his company's capital expenditures will be greater in 1961 than in 1960, and pointed out that Gulf's U.S. production has been increasing during the past four years.

He said that the boost in capital outlays would be "substantial" in some categories, such as petrochemicals.

Gulf will budget approximately $39-million for exploratory activities abroad, excluding countries in which the company now produces. That estimate compares with $36-million spent in 1960.

In the U.S., Brockett said, Gulf will spend more on drilling in 1961, but will not drill as many tests as in 1960 because deeper drilling has increased costs.

For the oil industry generally, Brockett estimated that capital requirements to find a barrel of oil, and get it to the consumer in the form of usable products, amounts to $3,000 per bbl. of oil produced.

Brockett noted that Gulf has increased its U.S. production by 110,000 b/d during the past four years. The company expects to produce 340,000 b/d during 1961 in the U.S., compared with 328,000 b/d during 1960.

Brockett pointed to the Russian "threat" to world oil markets as one of the factors responsible for crude price declines.

"We are feeling that [Russian oil] pressure at many points," he added.

Except for Venezuela—which, he said, "has its problems"—Brockett said the "situation is pretty good" in all other countries where Gulf operates.

Rathbone also commented on the Soviet penetration into world markets—a move that carries "tremendously bad implications for world trade."

Rathbone said the proposed Russian-Italian barter transaction is a real threat to the markets.

Under the transaction, Russia will

supply approximately 12-million tons of oil (about 100,000 b/d) over a three-year period in exchange for Italian products.

Rathbone said the f.o.b. price of the Russian oil figures out to about $1 per bbl., while privately-produced U.S. oil will have to sell at about $2.75 per bbl., and Middle East crude would have to bring about $1.85 per bbl., all on an f.o.b. basis.

"At those prices, it is just impossible for private companies really to compete. That is a completely non-commercial price," he asserted.

Furthermore, he observed, one of the items Russia will receive will be 40-in. pipe, with which it intends to build a crude oil line from Soviet fields to the edge of Western Europe.

He noted that Russia has also offered Italy another 40-million tons of oil over a five-year period, an amount that would far exceed Italian demand. This would mean that Italy would merely be an agent to push this excess onto the world market.

Rathbone estimated that Russian exports to the Western world probably total around 400,000 to 450,000 b/d now—"not a great deal in terms of current world demand, but when added on top of a weak market and an over-supply situation, it can be the straw that breaks the camel's back."

Terming the Russian move a "cold war" tactic, Rathbone called on western governments to form a solid front against such deals.

Rathbone said the Russian oil-marketing effort was "clearly political," designed to "sow dissension."

He noted that deals have either been made or are being talked with Finland, Denmark, Sweden, West Germany, India, Cuba, and Ceylon.

U.S. demand for crude—domestic and imported—is expected to rise by only 1% to 1.5% annually between now and 1965, according to an official of the Independent Petroleum Assn. of America.

Minor S. Jameson, Jr., executive vice-president of the producer organization, said that such a rate would provide an additional market for between 100,000 b/d and 150,000 b/d per year.

The lower growth rate in the demand for crude, he explained, will be a result of the encroachment of natural gas liquids in supplying a higher percentage of the demand for liquid hydrocarbons.

"The industry," he said, "is confronted with a seeming dilemma. On the one hand are the problems created by a lower rate of growth; on the other, the task of finding and developing the tremendous reserves that will be required to fuel the nation's future."

Mobil Oil Co.'s president, Herbert Willetts, advised oil men to "conserve your dollar as you conserve your oil."

A dollar spent anywhere in the oil business has to be earned back, he warned. "There is only one place to get it back—not from a pipeline company, not from a refinery—but only from a customer, a consumer."

But then he noted: "The consumer is telling us, in effect, 'don't count on me to keep using up more and more oil every year. If you try to pass along higher costs to me, I will buy my energy some place else, or I will get along with less.'"

One suggestion to counteract the slower growth in demand came from an Ethyl Corp. official, who recommended that the industry adopt new methods to stimulate "the latent desire to drive."

Malcolm P. Murdock, vice-president in charge of sales for Ethyl, said growth in gasoline demand has been due entirely to more cars on the road —not more use of individual cars.

Gage Lund

A. P. Frame

Vernon A. Bellman

A. O. Savage

Four Vice-Presidents Named to API Posts

Four new vice-presidents were elected by API's board of directors this week, and Chairman M. J. Rathbone and President Frank M. Porter were re-elected for another year of service.

Rathbone is president of Standard Oil Co. (N.J.), and Porter is president of Fain-Porter Drilling Co., Oklahoma City. This is Rathbone's second term as chairman, and Porter's twelfth as president.

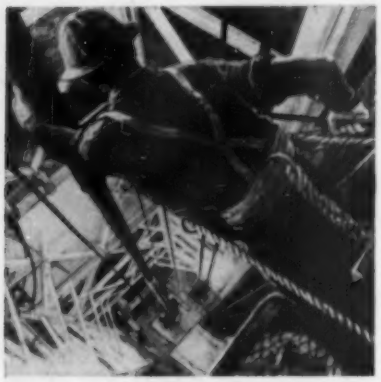
The four vice presidents are:

- **Production: Gage Lund**, vice-president and a director of Standard Oil Co. of California. He succeeds L. E. Fitzjarrald, vice-president of Phillips Petroleum Co.
- **Refining: A. P. Frame**, vice-president, Cities Service Co. He succeeds Clarence H. Thayer, vice-president, Sun Oil Co.
- **Marketing: Vernon A. Bellman**, vice-president, Mobil Oil Co. He succeeds C. J. Guzzo, vice-president, Gulf Oil Corp.
- **Finance & Accounting: A. O. Savage**, comptroller, Standard Oil Co. (N.J.). He succeeds W. J. Arnold, vice-president, Pure Oil Co.

Henderson Supplee, Jr., president of Atlantic Refining Co., was reelected to his second term as transportation vice-president.

P. C. Spencer, chairman of Sinclair Oil Corp., was reelected treasurer.

THE BEST SAFEGUARD IS KNOWLEDGE



In the oil and gas industry, knowledge is acquired only through long years of experience. Republic, as a pioneer oil bank in the South . . . with the South's largest Oil and Gas Department, has this knowledge. For decades, Republic has been pacing the industry, keeping thoroughly informed on new trends and developments, credit ratings, equipment distributors and all the varied factors involved in oil and gas financing.

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What's New / IN THE INDUSTRY

Preliminary tests to be conducted in the Pacific next year may decide the fate of Project Moho—the operation designed to drill through the earth's crust. Dr. Gordon G. Lill, chairman of the National Academy of Science committee in charge of the project, told a Tulsa group: "If the tests are not successful, I wouldn't be surprised if we abandoned the whole project."

•

Because Thurman Pava failed to exhaust his administrative remedies first, his suit against import controls can't be entertained legally. So ruled Federal Judge George C. Sweeney in Boston District Court, in dismissing Pava's contention that the control program and the presidential proclamation are unconstitutional (PW—Sep.11'59,p15). Pava, a Springfield (Mass.) dealer, had sought a permanent injunction against the Collector of Customs for the Port of Boston on the grounds that the controls jeopardized his ability to meet competition.

•

Ray O. Shaffer, chairman and chief executive officer of Reed Roller Bit Co., is also serving as temporary president. Shaffer took on the additional chores following the resignation of John Maher, president, who plans to devote his full time to his cattle and ranching interests.

•

American Oil Co. will centralize its credit card accounting and collection operations in Chicago next year, in what it terms the world's largest unit. The consolidation is part of the organizational streamlining that is to go into effect Dec. 31, when Amoco goes nationwide. Heretofore credit card and collection operations have been carried out in Chicago, Baltimore, and Salt Lake City, according to President L. W. Moore.

•

A drop in gasoline consumption in Virginia is being blamed partially on the new penny-a-gallon tax increase. Consumption is off 20.5-million gal. for the first quarter of fiscal 1960-61. Causes cited, in addition to consumer resistance to higher gasoline taxes, include compact cars, a decline in tourist trade, a business recession, and some pretax stocking of gasoline by Virginia dealers.

•

Venezuela's oil minister, Juan Perez Alfonzo, feels his country is doing all right in the international market. Defending his policies against mounting criticism from businessmen, he declared brusquely: "We do not produce petroleum for sport, to see how much we can produce, but to obtain fiscal revenues." He stressed that greater exports "could produce a decline in prices, and result in lower earnings."

•

J. L. "Slats" Latimer, senior vice-president of Mobil Oil Co., will retire Jan. 1. Latimer, also chairman of Magnolia Pipe Line Co., will wind up 45 years of service to the industry. He plans to continue his activities as a director or trustee of numerous Dallas-based firms, research groups, and civic associations, however. Latimer started his career with Magnolia as a loading rack helper at Thrall, Tex., in 1915. He was president of Magnolia Petroleum Co. before the merger into Socony Mobil Oil Co.

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Tubing Guide Nose

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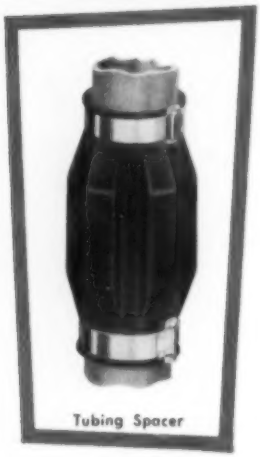
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Looking Ahead in Washington

McGraw-Hill
Washington
Bureau
November 18, 1960

There are some doubts now that the outgoing Eisenhower Administration will carry out planned oil import changes. Two revisions with sizable impact on the imports program were still pending decision this week. One is the proposal to expand the number of residual oil importers and redistribution of residual allocations in Districts I-IV. The second is the plan to whittle crude imports by taking into account additional supply factors, resulting in a cut of about 60,000 b/d, perhaps more.

•

Interior Dept. officials who call the turn on imports are demoralized by the election result. They will leave office when the Kennedy Administration takes over, and are not inclined to fight the imports problem any further. They are reluctant to add more complexity to an already involved imports program, which is sure to get a study by Kennedy appointees.

But the GOP influence on imports will extend through the first half of 1961. New import allocations will become effective Jan. 1—three-month allocations for residual fuel oil, six months for crude and finished products. All will have been approved by the outgoing Interior Dept. officers.

•

Watch for announcements on Kennedy Cabinet members soon. The President-elect is expected to make known most of his choices late this month or early in December. Most of the names being mentioned for the posts are well-known ones, but there may be a few surprises.

There are now several possibilities for a new Secretary of Interior. Add the name of Gov. Steve McNichols of Colorado to those previously mentioned—Rep. Stewart Udall (D., Ariz.) and Sen. Clair Engle (D., Calif.).

Take a look at other Cabinet jobs. Gov. Luther Hodges of North Carolina is considered to have a voice in future oil import decisions. Gov. Abraham Ribicoff of Connecticut is the leading candidate for Attorney General. He would be expected to take a hard line against mergers and price cases. Paul Rand Dixon, counsel of the Kefauver antitrust subcommittee, is being talked for a seat on the Federal Trade Commission.

•

An expected lame-duck slowdown in Washington won't be reflected in the Federal Power Commission and some other regulatory agencies.

FPC is expected to rule soon on the proposed Rock Springs gas pipeline from Utah to California. This joint project of El Paso Natural Gas Co. and Colorado Interstate Gas Co. has hit some snags at the commission, however. The pipeline's potential market is the major roadblock. FPC officials expect the same market—Southern California—to be sought by the anticipated Tennessee Gas-Pemex line through northern Mexico. The commission will have to decide, even though the Tennessee-Pemex plan has not yet been filed.

•

The natural gas and coal industries now are awaiting a U.S. Supreme Court decision on boiler use of gas. The court was scheduled to hear the Consolidated Edison case this week. No ruling is expected until early 1961.

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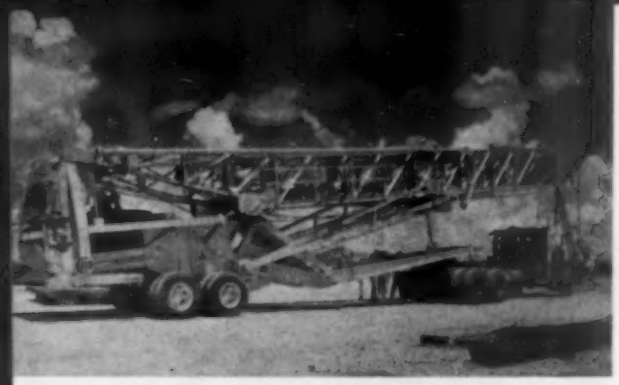

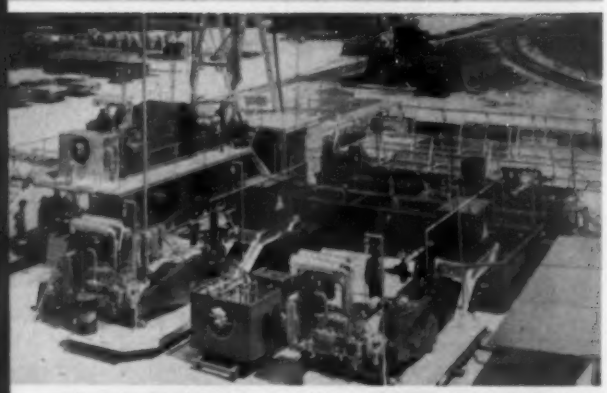

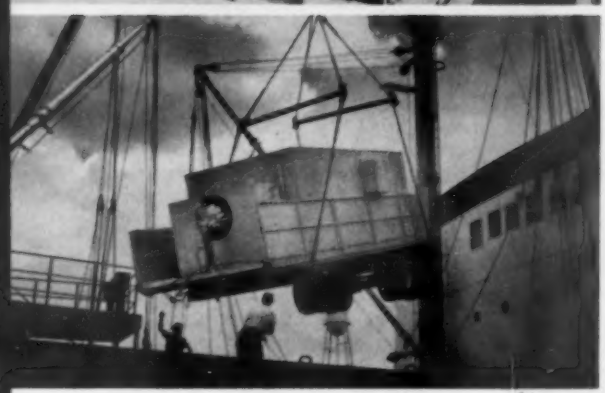

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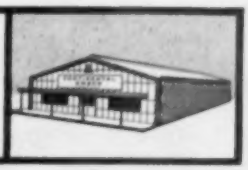

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Want to Cut Costs? Break Old Habits

- **Tidewater's Miller urges operators to break habitual ways of doing things to create a climate of economy.**
- **There's much that can be done right now to effect more savings in exploration, drilling and production.**

Habit—"built-in resistance"—is a primary reason why oil is not being found and produced as cheaply as possible, says Tidewater Oil Co.'s E. B. Miller, Jr.

Miller, a vice-president, outlined various approaches to more economy in exploration, drilling, and production at a Division of Production group meeting at this week's annual gathering of the American Petroleum Institute in Chicago.

Miller noted that the industry has shown real progress in effecting economies in these areas, "but there is much more improvement possible."

He urged that "if the industry is really going to cut its over-all costs, it must condition itself, creating a climate wherein everyone is seeking to make changes which will result in economies, regardless of how radical the changes may seem."

Miller took a hypothetical field and showed how cost-cutting procedures can be applied from initial exploratory work to ultimate depletion.

Miller made a personal survey of individuals in the industry to come up with as many cost-cutting ideas as possible.

Rather than listing these suggestions and expanding upon them, he took some of the recommendations and applied them to his hypothetical field.

"This 'hypothetical field' is not in any particular state; its size is unknown at the present time—as a matter of fact, leases have not yet been taken," Miller said.

Long-range geological work and planning led to some economies before actual exploration even began, Miller related.

This preliminary effort resulted in improved grading of exploration provinces as a function of well depth and cost. This indicated the economic potentialities of the area and was the determining factor behind the decision to carry on exploration, Miller said.

The exchange of geophysical records among several companies eliminated the necessity of duplicating a great deal of nonproductive and costly work.

As a result of a lead developing from this exchange of data, Miller went on, geophysical work was confined to one particular area of interest, "with a great deal of saving."

When geophysical crews went into the area, they were cautioned to carry on their work in such a way as to create a favorable public impression.

Public relations efforts by geophysical crews were supplemented by landmen following in their wake. The landmen put stress on the economics of land acquisition in the hypothetical field.

The landmen explained advantages of unitization and merits of the depletion allowance in talking to potential royalty owners. In executing agreements, the landmen made sure voluntary pooling agreements were included in the leases.

Miller added that the emphasis was on good deals, not on the amount of acreage acquired. Particular attention was paid to the amount of the annual rentals, with a realization that all of the property could not be tested within the first year, and that excessive rentals often force premature investment of substantial amounts.

ERNEST B. MILLER, JR., Tidewater Oil Co., outlined possibilities for economy in exploration, drilling, and production at this week's API meeting.

Miller noted the relevancy of this approach by saying that the trend in recent years has been toward increasing royalties, rentals, bonuses, and drilling requirements, which are a cost to the industry just as directly as geophysical work or drilling expenses.

Negotiations were started early to agree upon an exploratory test by exercising the voluntary pooling rights in the leases.

"Once the size of the unit was agreed upon, the initial well was so located with respect to the unit boundaries that it would fit into an appropriate spacing pattern in the event it was a commercial producer," said Miller.

"The operating agreement was signed promptly, and only minor changes were necessary to fit the few variations peculiar to this particular operation."

Bids to drill the hole contained specifications for all the latest improvements in drilling techniques.

These included such factors as casing design, hydraulics, bit selection, and a controlled mud program, Miller said. Feasibility of slim-hole drilling also was studied.

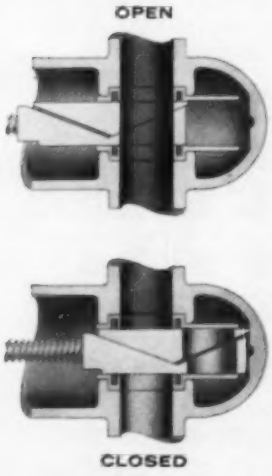
In this hypothetical case, Miller added, deviation requirements were relaxed, which resulted in a sizable reduction in the contractor's bid on a footage basis. Bids also were received from several mud companies on a competitive basis for furnishing mud and technical services for the complete job.

Realizing that it is highly important to learn as much as possible about the reservoir early in the development of a field, the program included plans for coring, logging, and testing any significant shows.

The test turned out to be an oil producer. A confirmation well was located on optimum well spacing.

Miller said studies showed the producing formation to have reasonable porosity and permeability. With this information, it was concluded that proper well spacing could vary from 80 to 160 acres, and that if further development of the field continued to verify the geological concept, fieldwide unitization would be desirable.

The confirmation well was located on a pattern to permit 160-acre spacing, with the realization that, if



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further information indicated a closer spacing was necessary, infill wells could always be drilled.

Miller added that it is in the area of proper well spacing that the industry can now make the greatest immediate economies.

He said nearly every reply in his survey included the need for appropriate statutes and proration formulas to provide the incentive for properly spacing wells, and thus to eliminate drilling of unnecessary holes.

Returning to his hypothetical field, Miller added that only temporary producing facilities were installed at the discovery, since it was known that it would be highly desirable to have centralized facilities to service the entire area as development progressed.

After a suitable number of wells had been drilled, a central site was selected to serve for central gathering facilities. Lease automatic custody transfer equipment was planned in cooperation with pipeline personnel of the oil purchaser.

Miller noted that considerable money could be saved by treating the oil for basic sediment and water under large-volume conditions at the refinery. So an agreement was reached with the pipeline company to permit a field tolerance of 5%, with an appropriate charge for cleaning. This eliminated the necessity for installing expensive equipment in the field to clean the oil to 0.2%.

Much study was given to initial automation equipment, so that it could be adapted into a more efficient installation as development progressed.

It was concluded, Miller said, that ultimately it would be practical to flow the wells automatically on the individual leases, and to measure and account for all production on a lease basis, transferring this to the purchaser, and also that individual well performance data could be automatically collected and used for determining the efficiency of operations.

The information so collected would be directly transmitted electrically to computer machines, from which reports would be prepared for various parties requiring them.

Miller noted that in the hypothetical field, proper planning could provide for central facilities to be used by all operators at a real saving. "This would require foresight and comprehensive planning," he said, "but this saving is within easy reach if we are willing to use our imagination and break away from the conventional method of gathering and storing oil."

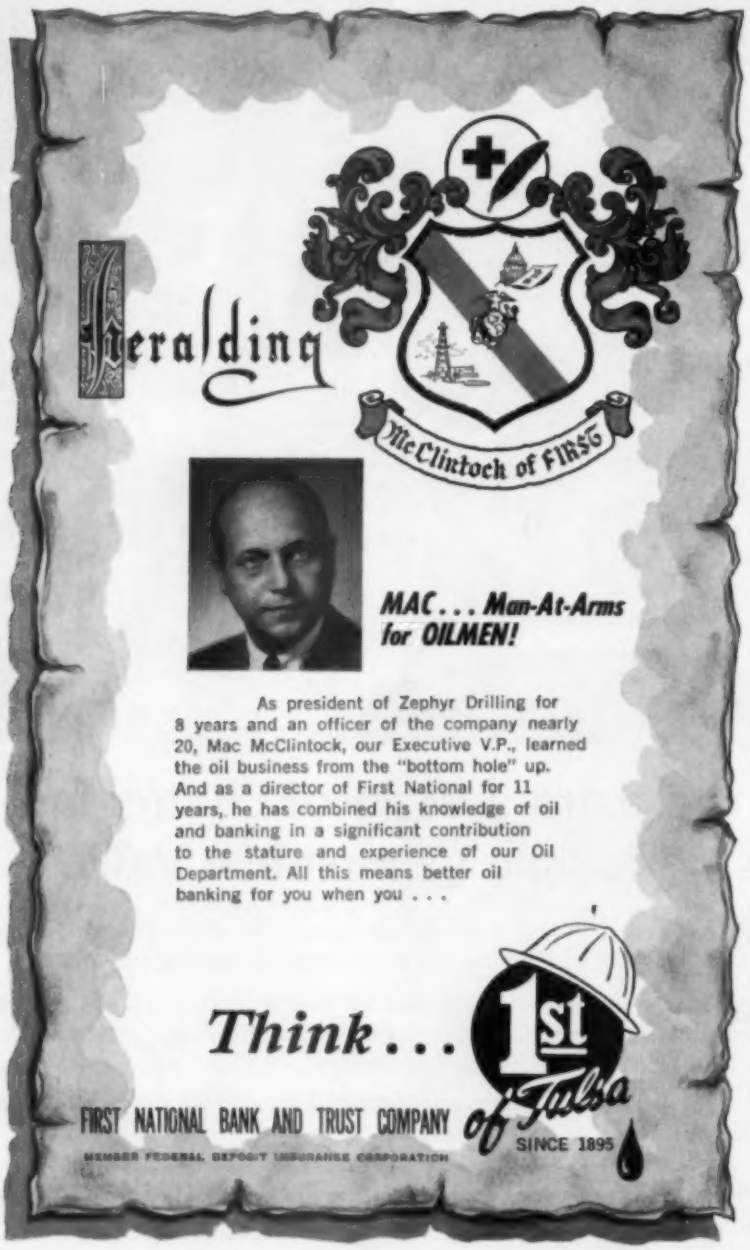
He added that the Interstate Oil Compact Commission has had a committee working to devise standardized forms required by various state regulatory bodies. Such a form could "certainly open up avenues of economy."

Secondary recovery was initiated early, and a fieldwide unit set up.

Preparation of the unitization agreement was relatively simple, since the industry has agreed on a standardized form which only had to be adapted to meet the particular conditions of this field, Miller reported.

After the operator was selected, two nonoperators were chosen to do all the required accounting for all of the nonoperators. By this method, Miller said, substantial reduction was made in the number of accounting reports, to far fewer than would have been necessary had each of the nonoperators done his own accounting.

The field was carried to depletion under the unit operation and the recoveries amounted to approximately twice as much oil, at much less expense, as could have been recovered if it had been operated individually and without pressure maintenance.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Urges Updating of Oil Laws, Rules

Every producing state should have a market-demand proration law, and other changes also should be made, particularly with respect to allowable formulas, says R. M. Williams, of Phillips Petroleum Co.

This was one of the major points Williams made this week in urging modernization of state laws and regulatory bodies.

Williams, assistant attorney general for Phillips, outlined his views before a Division of Production group meeting at the American Petroleum Institute's convention in Chicago.

Williams told the group that "whether you or I like laws, rules, and regulations is not the question. That has been decided for us. We need and have them, and whether good or bad, we will continue to have them."

The Phillips attorney noted that only six states—Texas, Oklahoma, Louisiana, New Mexico, Kansas, and North Dakota—have "reasonably adequate" market-demand proration laws.

But, he added, these states have carried "more than their fair share of the load" in trying to bring a balance between production and demand in recent months.

"Market-demand statutes do not limit the market for oil and gas," he said, "as some claim. Excess supply does not create additional markets. Excess supply merely chokes the market.

"The best place to store excess oil is in the ground."

Williams urged revision of current proration laws to give greater weight to acreage and to depth.

The Phillips official noted that most of the allocation formulas were adopted in the early 30's and 40's, "when the all-important unit of production was the individual well, regardless of acreage of reserves behind the well."

He said the per-well factor and the weight given the individual well in fixing allowables today "are such as to encourage the drilling of otherwise unnecessary wells merely to gain current allowable. This results not in the ultimate production of any more oil, but merely in more proration."

With the growth of wider spacing, Williams continued, "it is imperative that acreage be given a greater weight in a well's allowable."

Concerning deep drilling, he urged that "all states should adopt a fair depth bracket that will permit a proportionately greater allowable for deeper and more costly wells."

He contended that if shallow stripper wells are to be given minimum or marginal allowables to justify their continued operation, the deeper and more costly wells should be given higher allowables to justify their continued operation.

Williams suggested the number of holes to be drilled should be prorated by adoption of adequate well-spacing and pooling laws.

He cited the East Texas field as an example of wasteful drilling, noting that some 30,000 wells were drilled in that field on an average of 4.3 acres per well, "where one well to each 80 acres would have more than adequately developed the field and recovered the same amount of oil."

Williams said the excess 28,000 wells cost roughly $420-million to drill. "Add this to the added cost of operating these 28,000 unnecessary wells and you get a total figure that is beyond comprehension."

Williams charged further that such practices stifle competition with more cheaply produced foreign oil.

"This is a problem that can be solved only by the passage of proper administration of adequate well-spacing laws giving to the regulatory agencies of the producing states the authority to determine and fix optimum well-spacing units and providing for pooling of interests within well-spacing units," he said.

The rule of capture, Williams continued, "never was designed to give one man the right to drill a well on a small tract and limit his neighbor to only one well on a large tract, with the same allowable formula applied to both."

He added that Texas, "more than any other state, is sorely in need" of a proper well-spacing law with provision for pooling within units.

There is a great need for unitization laws in states not now having them," Williams said, "and for improvement of the laws in states having them."

"We should also look at the many, many fields that should be unitized but that cannot be unitized," he continued, "or are too difficult to unitize, without the aid of adequate laws. Grave inequities could be removed, if the means were provided in a fair hearing to deal with the problems of the minority."

Other areas of production also are in need of better laws and regulations, Williams added.

These would include, among others, "the mulitple completion of wells, the commingling in the wellbore of production from different horizons, the use of meters and automatic custody transfer units for the more efficient and expeditious measuring of production from a lease or group of leases, and greater uniformity of reporting practices and forms."

Williams said that too much emphasis is placed by many laws and regulatory practices on treating each separate sand stringer or lense, although part of a general series, as a separate reservoir and requiring that it be produced as such. "Much oil and gas can be recovered if we discard this fiction and treat more of these stringers and lenses as one."

He added that adoption of more uniform reporting practices and forms "should be given high priority."

Research is Proving Profitable

Fracturing and fluid-injection are two areas where research is active in adding to the nation's oil productive capacity.

This was pointed out this week by L. E. Elkins, production research director, Pan American Petroleum Corp.

Elkins said that fracturing and fluid-injection are leading to an increase in reserves and productivity at a lower cost than development of new reserves.

And expected new developments in these areas will yield even greater profits in the future.

Fracturing, since its introduction in 1949, has added an estimated 5½-billion bbl. of oil to the reserves of the U.S. and Canada.

Nearly 300,000 fracturing jobs have been performed in the U.S. and Canada since 1949, Elkins reported.

"The industry is entering a new era in fracturing. Fractures can be placed at specified positions in the section, their flow capacity increased with specially designed propping agents, and they can be made long or short.

"Fractures can be planned and executed to fit into the total depletion picture of many types of reservoirs."

Along with fracturing, he said, there has been an accelerating trend toward

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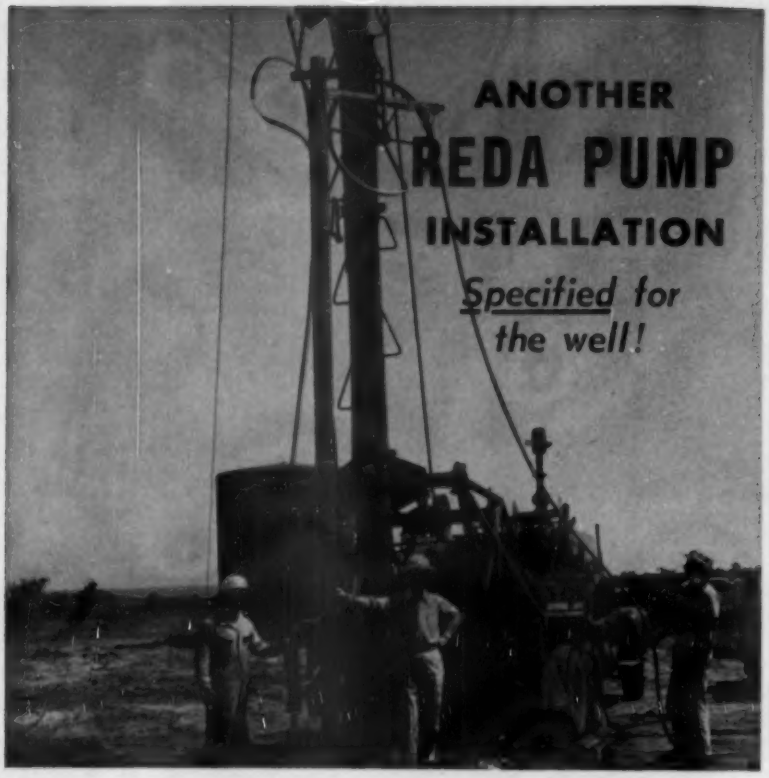

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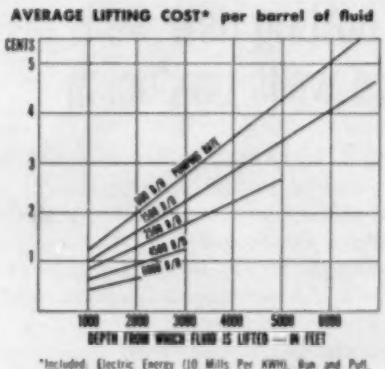

*Included: Electric Energy (10 Mills Per KWH), Run and Pull, Repairs, Upkeep, Transportation, Labor and Amortization (8 Yrs.)

Chart "A"

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the early and extensive adoption of fluid-injection programs.

Fluid-injection, now accounting for roughly one-sixth of the nation's productive capacity, will reach one-third by 1970 and approximately one half by 1980.

Elkins estimates that recovery efficiency (past production plus proved reserves, divided by total cumulative oil discovered) in the U.S. is trending in this manner: 23% for 1940, 33% for 1960, and 48% for 1960.

Much of this improvement, he added, is due to fluid-injection and the heavy contribution of research in this direction.

Research is playing an important role in furthering growth of more inexpensive methods of increasing productive capacity.

The role of research was emphasized by Elkins, who spoke before a Division of Production group meeting at the American Petroleum Institute's annual convention in Chicago.

In fluid-injection, Elkins said, research is assisting engineers in screening reservoirs to decide on the best type of fluid-injection.

He expects "a number of important breakthroughs for improving waterflood recovery efficiency in the next ten years"—perhaps many in the area of research dealing with reservoir rock wettability.

Developments in the direction of using additives to modify interfacial forces, he said, will perhaps combine the advantages of conventional waterflooding and miscible slug flooding and cancel out most of the disadvantages of both.

In fracturing, Elkins said, "a number of complex research investigations have resulted in developing methods whereby fractures can be engineered to achieve the best possible fracture for the situation at hand at a minimum cost.

For best results, research must be properly integrated and its impact recognized by long-range planners.

There must be a flow of communication between field and laboratory to afford a maximum opportunity to improve profitability.

If cost reduction is the direct result of research, perhaps planners can ignore its impact, he said.

"But if research developments lead to an accelerated increase in productivity and reserves over that needed to meet projected demand, this cannot be ignored.

"Some trends in development spending might have to be altered or other factors could offset potential profitability gains from research."

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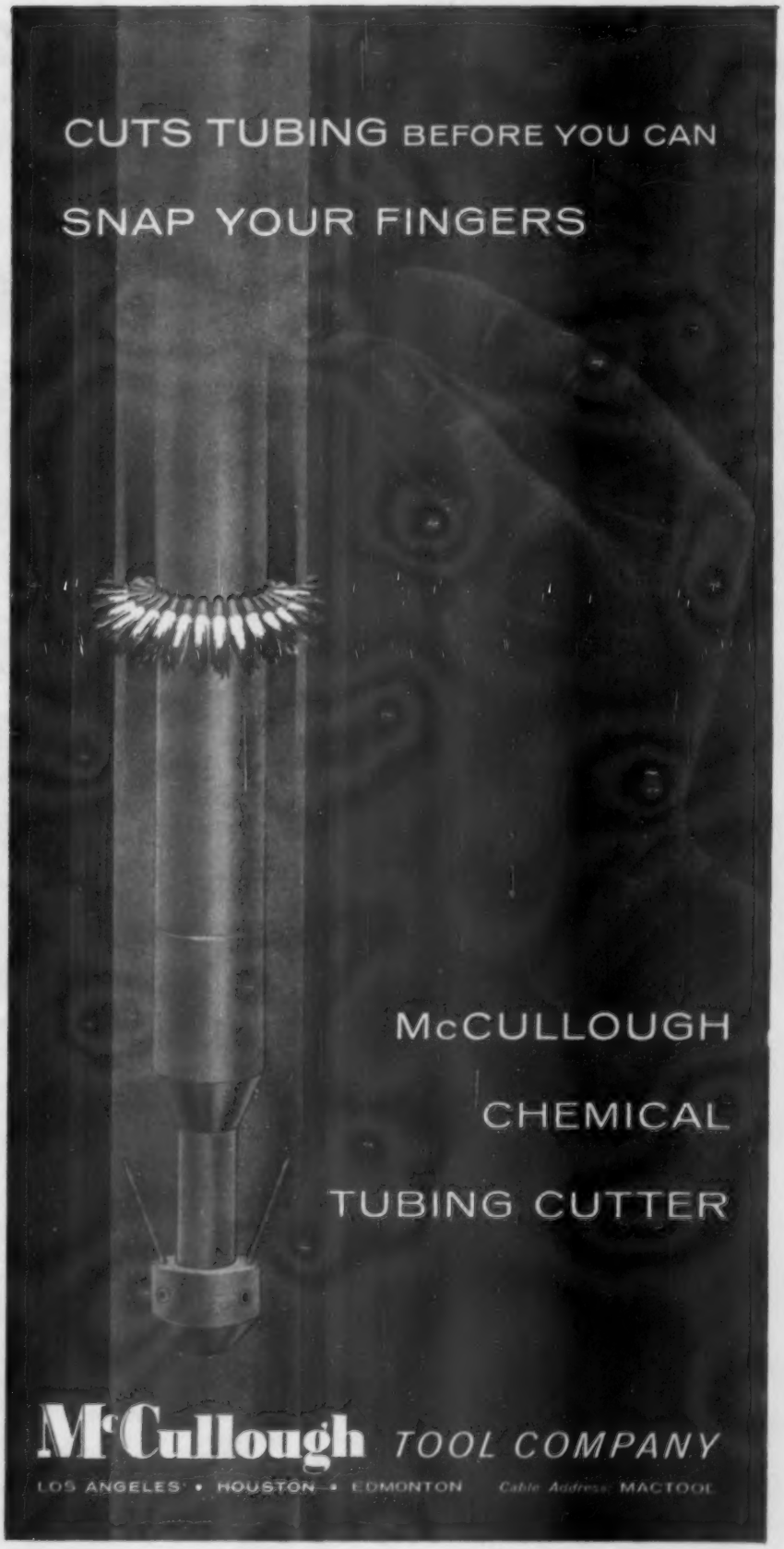

Drilling in Alaska May Rise 25%

Drilling in Alaska next year will increase perhaps 25% over this year, predicts P. W. Gester, district exploration superintendent for Standard Oil Co. of California.

This, he said in a recent talk in Anchorage, follows an increase during 1960 of almost 50% over 1959, when 16 tests were started.

On the other hand, Gester expects geological and geophysical activity next year to remain at a level comparable to that of this year, which was down considerably, he said, from 1959.

Gester said that according to a report issued by the state's Division of Mines & Minerals, total drilling and exploration costs during 1959 amounted to approximately $30,650,000. At least 40% of this, in his estimate, was spent in the Cook Inlet area.

Using dollars as a yardstick, Gester said geological and geophysical work during 1960 appears to be only some 30% of that in 1959, but that the increase in drilling raises the total expenditure to around $30-million.

Gester foresees a continued high level of activity in the Cook Inlet area.

Union Oil Co. of California and Ohio Oil Co., he noted, are currently engaged in a three-test drilling program in their Kenai Unit to get a better idea of the gas reserves of this area.

It's expected, he said, that this drilling will assist them in establishing the potential of the three offshore parcels they obtained in the lease sale last December.

In addition, Union and Ohio will drill a deeper exploratory test on their Knik Arm acreage as a follow-up to the two shallow coreholes they drilled this year.

"We are hopeful," Gester says, "that there will be further exploratory activity on the south part of the Kenai Peninsula, where Stancal has a large development contract."

Gester also anticipates activity on offshore leases along the west coast of the southern Kenai Peninsula, obtained in the sale last year by Stancal, Union, Ohio, Texaco Inc., and Richfield Oil Corp. (L. A.).

On the west side of Cook Inlet, in the area formerly designated as a bombing range, eight or ten oil companies have been participating in two full-scale geophysical surveys all summer.

One is still operating in the area.

Finally, he said, it's possible that Phillips Petroleum Co. will drill a test next year in the Wide Bay area, where the company obtained approximately 50,000 acres in last year's sale.

Phillips has had seismic and geological field parties operating in the area this year.

There's an even chance that a test will be drilled in the Copper River Basin next year.

There have been wild flurries of rumors concerning this area for the past year, Gester said, and the general geology is sufficiently attractive that there is a 50-50 chance a test will be made.

There more than likely will be some exploration in the Bristol Bay area during 1961.

Pure Oil Co. is reported acquiring a large land interest in this area, Gester said, and "we may expect to see some exploratory activity."

One highly significant test scheduled for next year will be in the Bethel area of the Bethel Basin.

Pan American Petroleum Corp. has already moved a rig and equipment up the Kuskokwim River and has parked it on the river bank waiting for the winter freeze to allow overland transportation to the company's Napatuk Unit.

The Yakataga area also may be the scene of drilling next year.

"We hope," Gester said, "that Richfield's drilling activities in [this] area will encourage them enough to continue drilling into 1961."

Richfield's No. 1 Kaliakh is suspended at 14,699 ft., and No. 2 Kaliakh at last report was being redrilled below 7,000 ft.

The area around Yakutat may also have some activity.

Colorado Oil & Gas Corp., Gester reported, at last report was drilling below 7,500 ft. at its No. 1 Dangerous River Unit, where it is hoped "they have sufficient encouragement to continue drilling in 1961."

Alaska is expected to offer more acreage for competitive bids next April.

The state presently is selecting approximately 158,000 acres under the Mental Health Act and 684,000 acres under the general grant provisions of the Statehood Act.

Some of the mental health lands are expected to be offered for bidding in April.

Depending on the amount of lands offered and the results of the geophysical surveys on these lands, there may be some drilling in 1962 or 1963, Gester said.

In northern Alaska, the Bureau of Mines reports, "substantial" recovery of petroleum in Umiat field is possible despite permanently frozen oil sands and unusually low formation pressures.

The Bureau report is the result of a study made after the Navy drilled 11 holes in Naval Reserve No. 4.

Perhaps the most significant exploratory test so far this year, Gester pointed out, is the No. 41-4 Soldotna Creek, completed by Stancal.

This test, for which Stancal was operator for itself and Richfield, revealed "a substantially larger pay section at better structural elevation as a south extension of the rather complex Swanson River oil field."

Another significant discovery, he said, is the Halbouty Alaska Oil Co. No. 1-B Halbouty-King, which found gas about 10 mi. south of the No. 1 Soldotna Creek Unit discovery.

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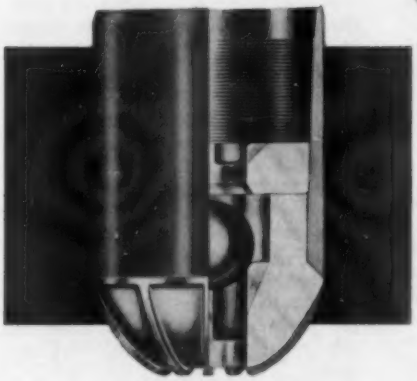

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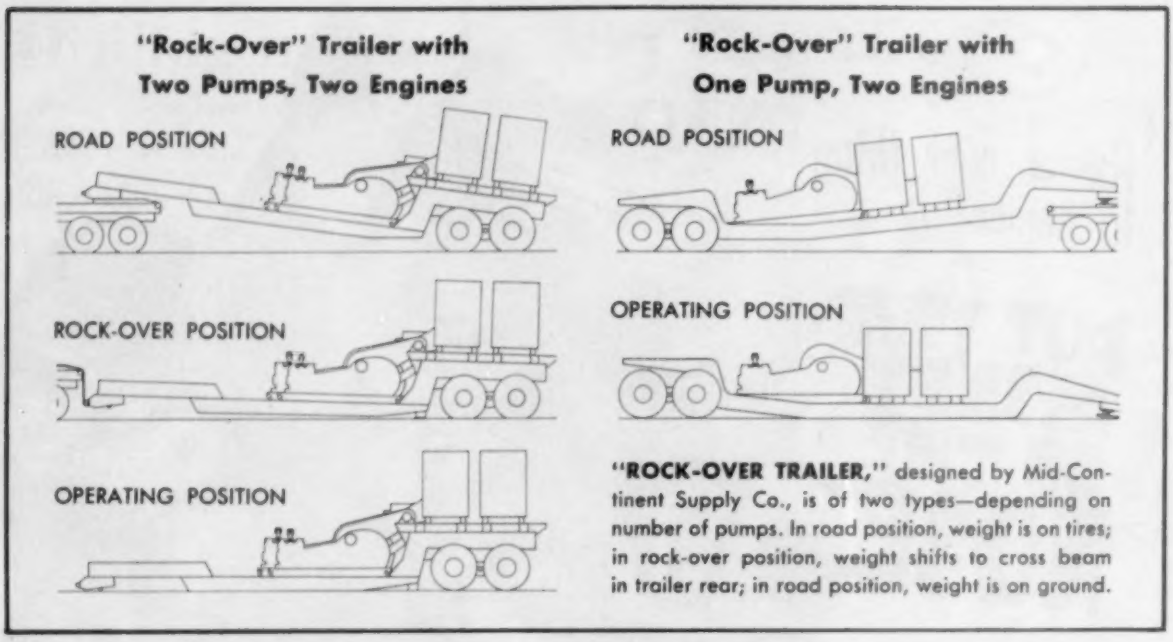

"ROCK-OVER TRAILER," designed by Mid-Continent Supply Co., is of two types—depending on number of pumps. In road position, weight is on tires; in rock-over position, weight shifts to cross beam in trailer rear; in road position, weight is on ground.

Pump-and-Engine Trailer 'Rocks Over'

Use of the "rock-over" principle in trailer-mounted mud pumps and engines is contributing a new approach to drilling efficiency.

Designed by Mid-Continent Supply Co., the "Rock-Over Trailer" (patent pending) makes it possible for the mud pump to operate with the pump suction low, and with the trailer frame (or master skid) resting on the ground.

Mid-Continent's first "Rock-Over Trailer" went into operation in Libya in mid-1959. These trailer units carry two pumps and two engines.

The company also recently completed two new units that utilize the principle with one mud pump and two engines (see drawings). These have just arrived at location sites in Libya, for use by Santa Fe Drilling Co.

The "Rock-Over Trailer" permits mounting of mud pumps and engines as a unit that needs not be disconnected for moves to new locations.

T. M. Cone, chief engineer and technical advisor at Mid-Continent, says:

"We made the main skid, sometimes called a master skid, into a trailer frame, and mounted the bogie under a raised or offset portion of the trailer frame."

With this construction, he adds, pump vibrations are dampened and the need for jacks to take the weight off the tires is eliminated.

By extending the master skid or trailer frame beyond the fluid end of the pumps, the unit is provided with a working area around the fluid end of the pumps.

This also provides a platform or skid on which to mount the suction and discharge manifolds.

The arrangement of equipment reduces rig-up efforts substantially.

Cone notes that with one or two mud pumps, complete with power and with suction and discharge manifold all mounted into one unit, it is only necessary to hook up the suction hose and vibrator hose from the discharge to the stand pipe when the unit is on location.

"In other words," says Cone, "the pump, engine, compound, chain drives, chain guard, suction and discharge manifold will remain rigged up."

When the truck pulling the trailer arrives at a new location, it positions the unit. The king pin is disengaged and the truck is pulled out from under the trailer unit. The front end of the trailer is lowered to the ground with the winch line. Just before the front end of the trailer reaches the ground, the skid portion in front of the bogie (the rock-over point) will contact the ground. At this instant, the point of pivot moves from the axle of the bogie to the rock-over point.

As the front end of the trailer continues on to the ground, the trailer portion carrying the bogie will rise, so that by the time the trailer frame is

'ROCK-OVER TRAILER,' with two engines and one pump, went through this test rig-up by Mid-Continent Supply Co. prior to shipment to Santa Fe Drilling Co. for Libya use.

flat on the ground the tires will be raised off the ground.

Movements are also reduced commensurately when moving off a location.

Crews need merely disconnect all hose and the pump trailer unit is ready for the truck.

The truck backs in, attaches its winch line to the forward end of the trailer, and sucks the front end of the trailer up and onto the fifth wheel.

When the truck winch first starts picking up the front end, the trailer bed will pivot, or rock-over, at the rear end of the portion that is resting on the ground.

At the same time, the portion of the trailer frame that goes over the bogie will be coming down until the tires are loaded.

As the truck winch continues to raise the front end of the trailer, the rock-over point will be raised. When the trailer is over the fifth wheel, the rock-over point will have been raised sufficiently for road clearance just in front of the bogie wheels.

The forward end of the "Rock-Over Trailer" provides suitable space for centrifugal pumps and other small auxiliaries.

Up to now, says Cone, centrifugal pumps have had to be mounted in the substructure or as a separate skidded unit in order to have a low suction.

"Now," adds Cone, "we can mount them on the forward end of the trailer, thereby leaving them connected up and not having to handle them as a separate skidded unit."

Tool Aids Drilling-Mud Research

California Research Corp. is using a high-pressure, high-temperature rheolometer to help define and solve drilling mud problems.

Cal Research, a subsidiary of Standard Oil Co. of California, has been using the rheolometer for some time, but the details of the instrument and its use are just now being made known.

It was developed by Cal Research.

The rheolometer is used at the company's La Habra (Calif.) laboratory principally to study field drilling fluid samples from suspected trouble areas.

It also can be used to evaluate newly marketed mud systems and can be used for general research on drilling problems.

The device has been used for research on the critical problem of clay swelling, says Karl Hiller, senior research chemist.

In this area, the rheolometer is used to study the flow behavior of slurries of purified bentonites in different electrolyte solutions with different exchange ions.

From time to time, studies also are made to determine why certain muds break down at temperatures above 275F.

Static gel strength and yield point of mud samples also can be calculated.

Use of the proper drilling fluid on deep tests, says Hiller, can make the difference between completion and abandonment.

"Our rheolometer," says Hiller, "gives us information on field mud samples' flow behavior at close approximations of down hole temperature and pressure extremes.

"We can then prescribe a mud that will meet these particular circumstances. In some cases, we can even eliminate the drilling fluid as the cause of trouble."

Mud samples can be checked by the rheolometer at pressures from 0 to 10,000 psi. The temperature range is from 0F to 350F.

The rheolometer measures drilling fluid viscosity in the range of 10 to 1,000 centipoises at rates of shear from 0 to 1,000-sec^{-1}.

The central mechanism of the rheolometer is a machined pressure vessel, in which a conventional rotating cup viscometer is mounted.

Two air-operated Sprague pumps supply internal pressure. The pump shafts are driven by variable speed hydraulic transmission.

This allows a wide range of pressure variances to be exerted upon the sample.

Temperature is a function of coils within the pressure vessel. Matching thermocouples control the temperature. The vessel also is thermostated to assure uniform temperatures throughout a test.

The problem of keeping hydraulic fluid out of the mud sample was solved by using a unique liquid mercury seal. In this design, the hydraulic fluid utilized to serve as a lubricant for the seal.

The shear rate is computed from an oscilloscope's measurement of pump shaft rotation speed. A signal generator can vary the rotation to determine shear rates at which measurements are made.

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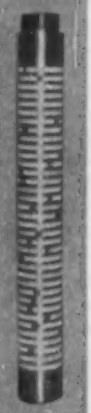

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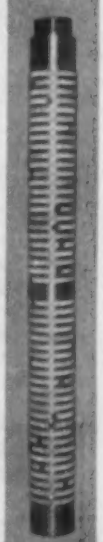

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What's New / IN EXPLORATION, DRILLING, PRODUCTION

Natural Gas Turbines Urged for Alaska

Generation of electric power by use of natural gas turbines is being urged as a way to meet a predicted power shortage in south-central Alaska in the next decade.

Erling Orwoll, manager of the Chugach Electric Assn., said the feasibility of such a program is now under study. If the program is approved, CEA plans to apply to the Rural Electrification Administration for an estimated $9.2-million to finance construction of gas-turbine power plants that would use flare gas from oil wells on the Kenai Peninsula.

Meanwhile, Alaska Power Co., still in the organization stage, has offered to supply Anchorage with electric power generated by gas turbines supplied with natural gas purchased from Standard Oil Co. of California, Union Oil Co. of California, Ohio Oil Co., and Halbouty Alaska Oil Co., all of which have gas wells on the Kenai Peninsula.

Maryland Tests Planned

Phillips Petroleum Co. is asking approval of exploratory drilling plans in Washington and Allegany Counties of northwestern Maryland.

The Board of Public Works will rule on the request, involving 6,000 acres of forest and game land, after consultation with other state officials. Only production in the state so far is in Garrett County, adjoining Allegany County in the west.

•

The U.S. Circuit Court of Appeals has reversed a lower court's dismissal of a case challenging the right of the Bureau of Land Management to cancel 86 oil and gas leases in Wyoming.

The lower court held that Interior Secretary Fred Seaton should have been named a party to the suit.

The circuit court held that the case cannot be decided by administrative action, and must be heard by a court.

The BLM started action nearly ten years ago to cancel the leases, which it claimed had been held by Walter Davis, of Casper, Wyo. in violation of federal acreage limitations. Pan American Petroleum Corp. sued to enjoin the bureau from proceeding with the cancellation. Pan Am had obtained one or more leases from Davis, and was one of 85 oil companies and individuals named in the action to quit title.

•

The flurry of interest created by the discovery of oil in California's Sacramento Valley has been dimmed by failure of a confirmation test to find more oil.

Texaco Inc. did find gas, however, though reportedly in small amounts, at No. 2 McCune, westerly offset to the valley's first oil producer (PW—Sep.9'60,p24).

•

Howsley & Jacobs, Albany, Tex., has purchased 25 Flippen sand wells in Shackelford County from B. C. McMordie, Albany.

McMordie recently purchased the properties from Riley G. Maxwell, et al, Abilene. Howsley & Jacobs plans a waterflood program.

•

Jade Oil Co. has been negotiating with Blue Oil Gas Co. to acquire oil and gas properties of the latter in exchange for Jade stock.

Blue Oil interests include a participating interest in 80 producing oil and gas wells, a royalty interest in 250 oil and gas wells, and a lease interest in more than 100,000 acres in Texas and Louisiana.

•

Three Oklahoma City men have formed two partnerships—one to engage in exploration activity, the other to line up "drilling deals."

Miller-Scott, Ltd., has been set up for exploration and Yinger Petroleum for drilling. They were formed by J. Keith Miller, A. J. Scott, and W. R. Yinger.

•

Texas Gulf Sulphur Co. will begin construction immediately on a $25-million potash mining and processing plant in southeastern Utah.

Claude O. Stephens, president,

Incentive Plan Set Up for Geologists

Lion Oil Co. division of Monsanto Chemical Co. has set up a plan whereby geologists and geophysicists will be upgraded along scientific rather than administrative or management lines.

Reason for the new approach is the company's belief that the traditional system of classifying and promoting geologists tends to lessen the quality of their contribution by encouraging them to give up full-time scientific work for more rewarding management posts.

"By setting up a parallel and complementary line of progression for geologists actively engaged in finding oil," says Lion's H. H. Bible, "Lion believes that its geologic efforts will be upgraded. By orienting the individual geologist into work areas best suited to him, the company anticipates that he will find the best use for his talents."

Basic to the advancement program is the establishment of three new classifications believed by Lion to be unique to the industry.

These classifications are senior exploration geologist, exploration geologist, and resident geologist.

Qualification for appointment to senior exploration geologist, adds Bible, is "a demonstrated, outstanding scientific ability to find new oil and gas fields through original, independent geologic investigation. He must have consistently proven such capability in the service of the company over a number of years."

The promotion plan has been 11 months in the making.

A company spokesman said the plan drew its inspiration from a similar one for research scientists and engineering technologists adopted by Monsanto in 1950.

The company adds that "decision to pursue a career along either line (administrative or scientific) does not preclude subsequent reorientation to the other."

Hole Enlarging

This is just one of the three *families* of Grant Tools made for reaming, hole enlarging and stabilizing. For full information on these, and a wide range of other down-hole and surface tools made by Grant, send for your copy of the complete Grant Catalog today, or see the Grant section of Composite Catalog!

You can get from Grant!

Every hole enlarging job presents its own special set of conditions. That is why Grant, with more experience in this highly specialized field than any other manufacturer, has engineered specific tools for *your* particular job. For opening rat-holes . . . enlarging hole for the casing string . . . under-reaming before cementing—in any well—Grant's 30 years of specialization have produced the right tool for the job at hand.

When hole enlarging is your requirement, *remember that only Grant makes and services all types of hole enlargers in active oil territory everywhere!*

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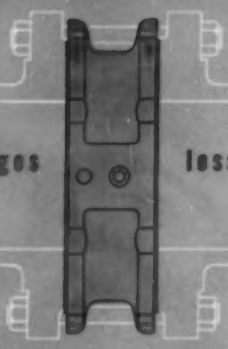

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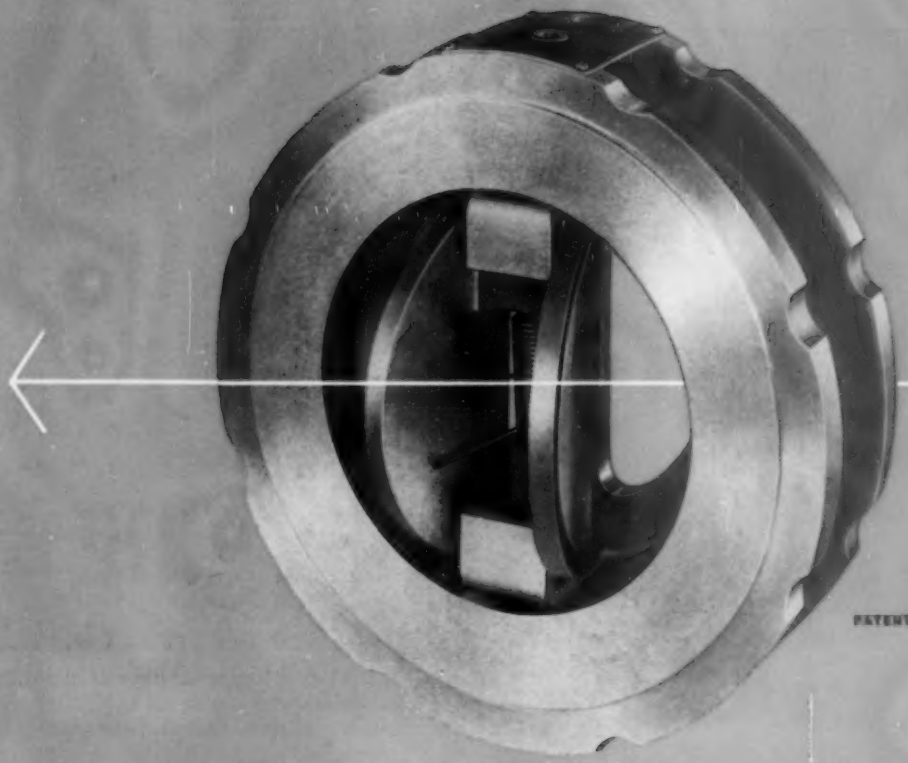
less space—weighs only 10% as much



PATENT PENDING

Mission Duo-Chek valves

Mission Duo-Chek Valves weigh approximately 10 per cent as much as conventional check valves. Smaller, lighter Duo-Chek Valves mean that you save on space, weight, installation, and price. But, you are getting a check valve with a bubble-tight seal, anti-slam closure, long life built in. No load is carried on the plate hinges. No external parts. No lubrication required.

The sine wave seal prevents seepage, yet holds without leaking or distortion at maximum test pressure. The sealing material is molded and bonded into a metal groove, making an "O"-ring type seal. Pressure deforms the packing. Metal-to-metal contact completely encloses the sealing material, preventing pinching off under pressure. Available in steel, 316 stainless, aluminum, and bronze to fit ASA raised face or ring joint flanges.

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said the company's board of directors also approved exercise of an option to acquire potash reserves at Cane Creek, Utah, from Delhi-Taylor Oil Corp. (PW—Sep.16'60,p30).

Stephens said the plant, designed to produce well over 1-million tons of muriate of potash annually, will make Texas Gulf the largest potash producer in the country.

•

The tubingless completion technique is getting its first significant test in California at a deep hole in the Castaic Junction field, Los Angeles County.

Humble Oil & Refining Co. is attempting a dual-string tubingless completion at No. 68 N.M. & F., section 14-4n-17w, after bottoming at 13,345 ft. Pipe in the hole includes 824 ft. of 10¾-in. surface casing and two strings of 2⅞-in. tubing, one cemented at 13,289 ft., the other at 13,316 ft.

•

Only 8 of 23 tracts offered in Wyoming received bids at the recent sale of oil and gas leases in the Wind River Indian agency.

The eight averaged $38.84 per acre for the 2,446 acres leased, for a total bonus of $72,556.

The California Co.'s $61.79 per acre for a 320-acre tract in section 3-2s-1w was high for the sale.

•

Drilling Highlights

Montana—Murphy Corp. No. 1 Sletvold, section 18-30n-48e, Roosevelt County, was completed for 476 b/d of 42-gravity oil through 14/64-in. choke and perforations at 7,660-92 ft. in the Nisku (Devonian). The discovery is 15 mi. northwest of Poplar (Madison) field and 35 mi. southwest of Redstone (Devonian) field, Sheridan County.

Colorado—Belco Petroleum Corp. No. 1 Egnar Unit, section 30-44n-19w, San Miguel County, flowed gas at the rate of 5-5-million cf/d on test at 9,228-91 ft. in the Mississippian. The test is 3½ mi. southwest of the discovery for Southeast Lisbon field.

New Mexico—Aztec Oil & Gas Co. No. 14-D Hare, section 10-29n-10w, San Juan County, was completed for 2.9-million cf/d of gas through ¾-in. choke and perforations at 6,648-80 ft. in the Dakota. The wildcat is 3½ mi. northeast of Dakota production at Angel Peak.

South Louisiana—Sohio Petroleum Co. No. 1 Joseph Rathbone Lumber Co., section 26-14s-17e, Lafourche Parish, was completed for 3.1-million cf/d of gas through 12/64-in. choke and perforations at 12,530-41 ft. The well is 3 mi. north of Melodia field.

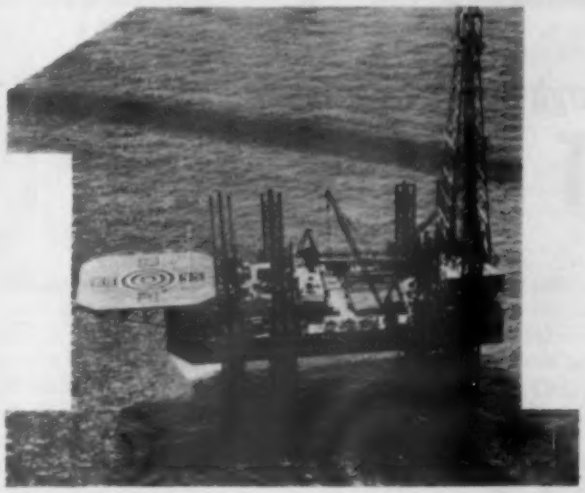
Nebraska—Tom Palmer, Inc., No. 1 Shelburn, section 27-2n-32w, Hitchcock County, recovered 190 ft. of oil-cut mud on 60-minute drillstem test at 3,771-80 ft. in the Lansing-Kansas City. The prospect is 4½ mi. north of Reiher (Lansing-Kansas City) pool.

North Texas—Bennett Oil Co. No. 1-B J. B. Irons, J. Bradshaw survey, Montague County, was completed for 210 b/d of 47-gravity oil through ¾-90 ft. in the Viola lime. The well is located 2 mi. southwest of Osage (Viola) pool.

Oklahoma—Carter division of Humble Oil & Refining Co. No. 1 Matousek, section 34-19n-7w, Kingfisher County, was completed for 268 bbl. of 37-gravity oil in 11 hours and 352,000 cf/d of gas through perforations at 6,856-908 ft. in the Manning. Operator at last report was preparing to treat Mississippi perforations at 7,122-330 ft. The wildcat is located approximately 2½ mi. north of North Dover pool.

1 OF 6 WAYS TO DRILL OFFSHORE

The quarter-century of experience OFFSHORE has logged in worldwide operations, an excellent selection of versatile drilling units plus an unexcelled engineering and operations staff, and a record of success in this demanding field enable OFFSHORE to offer you the most economical drilling contract service available *anywhere.*



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The most versatile of all, this type of drilling tool operates efficiently in water 15 to 110 feet deep, depending on soil conditions. Repeatedly proved successful under greatly varied weather, water and bottom conditions off the coasts of the U. S., Panama, Trinidad, and in the Persian Gulf. THE OFFSHORE COMPANY now has five units in this category.

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LOOKING UP—Length of drill starts into the hole after change of bits. Falcon Seaboard Drilling Co. of Tulsa is drilling this well with a 9,500-foot string of Pittsburgh Seamless 4¼-inch Grade E drill pipe. Falcon Seaboard has used Pittsburgh Steel tubular goods and an independent distributor for many years with pleasing results.

Pittsburgh Steel's Independent Distributors...

PUT THIS IN YOUR PIPE---SERVICE!

Drillers who use Pittsburgh seamless on well after well have a lot more than dependable drill pipe, casing and tubing going for them.

They have what Falcon Seaboard Drilling Co. of Tulsa calls "fair treatment from the mill" and—independent distributors who go more than the proverbial extra mile to provide service.

Boone Smiley, manager of the Mid-Continent Area for Falcon Seaboard, said:

"We've used Pittsburgh Steel's independent distributors through the years in times of short supply and when pipe was readily available. We've always felt that Pittsburgh Seamless did a job for us and the mill has always been fair."

Photographs on these pages show effective results of the close relationship between drillers and operators on one side and a Pittsburgh Steel independent distributor on the other. Here, near Maysville, Okla., Falcon Seaboard is using 9,500 feet of Pittsburgh Seamless 4½ inch O.D. Grade E Drill Pipe on the fourth well the string has drilled in the area in recent months.

The independent who supplied this drill string to Falcon Seaboard sold the first string of oil country tubular goods manufactured by Pittsburgh Steel. Continued progress through the years has been based on *service* to the trade.

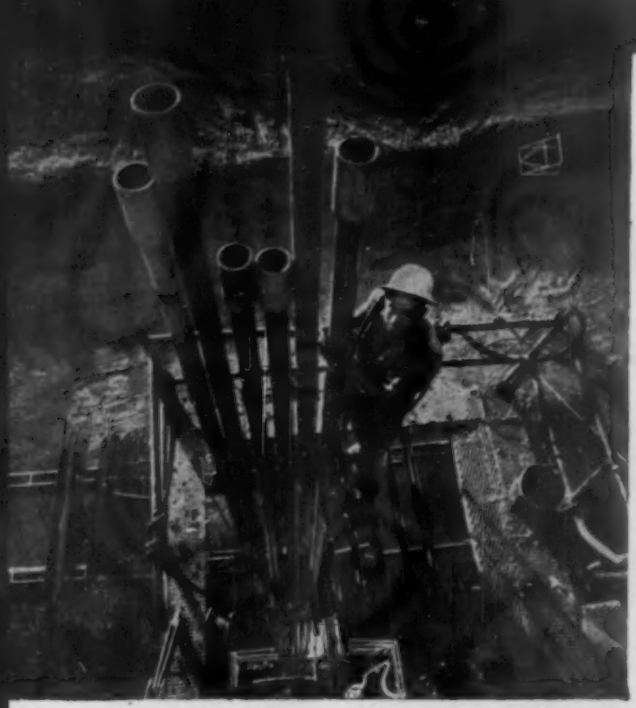
"We can't afford to get lazy," declared William G. Rudd, the distributor's sales manager. "The oil business is always subject to critical emergencies and they all have big dollar signs. It's up to us to pitch in and help."

As a case in point, during periods of acute shortage, this distributor set up a service called the Mid-Continent Pipe Exchange. As a free service to the industry, oilmen were polled for tubular material which they wished to swap for goods more strategically located, or more suited to their needs.

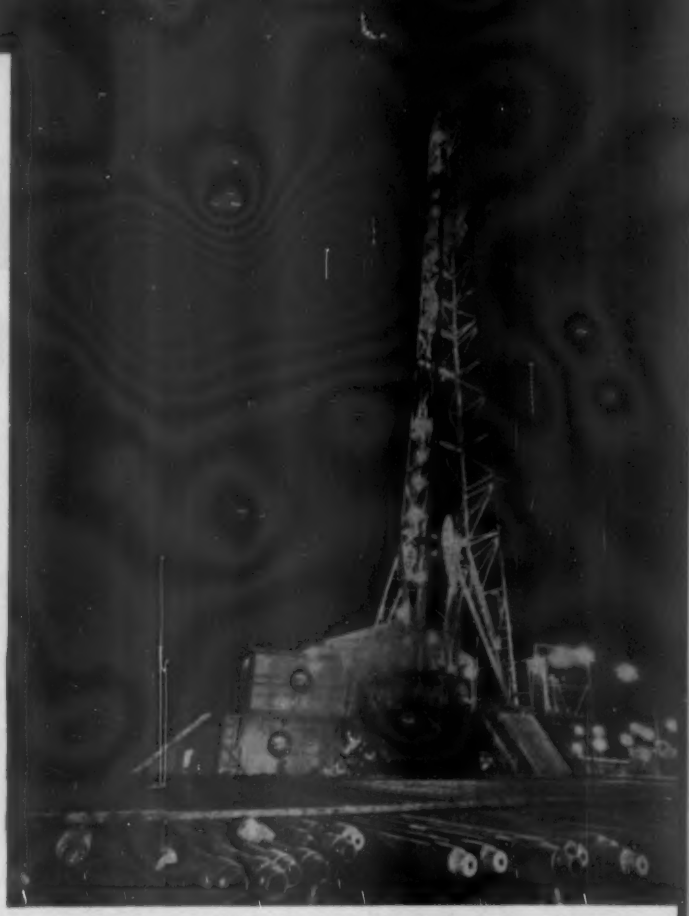
This extra service by Pittsburgh distributors is matched by the extra stamina you always get in Pittsburgh Seamless Drill Pipe—a stamina which stems from long experience in making special steels for the special jobs in the oil country.

When you buy your next string of drill pipe, or when you're ready to run casing or tubing, remember the combination of Pittsburgh Steel Co. and independent distributors offers you the kind of service—plus the utmost in dependable seamless tubular goods—that isn't available any other place.

It's easy to get lined up with an independent. They're listed at right. Call the nearest one today for quality seamless tubular products.



LOOKING DOWN—On monkey board of 131-foot, A-mast rig, roughneck gets joint of Pittsburgh Steel Co. drill pipe ready for re-entry during a trip. The 9,500 feet of drill pipe shown at top and on racks below was used to drill three previous wells.



Falcon Seaboard Drilling Co.'s No. 35 rig is at work here on a Sunray Mid-Continent lease near Maysville, Okla.

Driller Oliver Clark, left, chats with Max Thomas, distributor's representative, and Jewel Smith, Pittsburgh Steel field engineer.

Geolograph on same rig shows hole is at 4,296 feet with the rotary table, seen at right, operating smoothly. Geolograph chart indicates driller is midway between joint connections.

Distributor Home Offices

Bennett Supply Company Midland, Texas
Atlas Bradford Company Houston, Texas
Buckeye Supply Company Zanesville, Ohio
C. W. Cotton Supply Company Tulsa 5, Oklahoma
Franklin Supply Company Denver 10, Colorado
Houston Oil Field Material Co. Houston, Texas
Industrial Supply Company Wichita Falls, Texas
Iverson Supply Company Tulsa, Oklahoma
Longhorn Supply Co., Inc. Houston 14, Texas
Lucey Export Corporation New York 7, New York
Lucey Products Corporation Tulsa 19, Oklahoma
McJunkin Corporation Charleston 22, West Virginia
Midland Supply Company Wichita 7, Kansas
Mountain Iron & Supply Co. Wichita 2, Kansas
The Producers Supply & Tool Co. Fort Worth 2, Texas
Production & Refining Equipment Company Odessa, Texas
Sandy Supply Company Wooster, Ohio
Southwest Supply Company Pittsburgh, Pennsylvania
The Straker Supply Company Jackson, Michigan
Superior Iron Works & Supply Co. Shreveport, Louisiana
Tex-Tube, Inc. Houston 7, Texas
Western Supply Company Tulsa 1, Oklahoma

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Steel

Most of Oil's Chief Executives

The average chief executive officer in the U.S. oil industry made it the hard way—a rung-by-rung climb up through the ranks to the No. 1 job in his company.

This, in substance, is what PETROLEUM WEEK found in an extensive review of the careers and fortunes of the chief executive officers of the 25 leading oil companies.

Selection of the 25 companies was based on their gross incomes in 1959 (PW-Apr.22'60,p18).

This, in brief, is what the average "big boss" looks like:

- He is a college graduate with a technical background.
- He's still with the same company he started with almost three decades ago.
- Even though he started at the bottom, he achieved recognition early, and moved to the upper echelons rather rapidly.
- He was an executive administrator in his forties, and president of the firm by the time he reached the half-century mark.
- He is now 57 years old, and has been chief executive officer for the past seven years.
- He's meticulous, hard-driving, and frequently puts in a longer workday than most of his subordinates. A bulging briefcase frequently accompanies him home at night.
- He travels extensively, and his schedule is busy, busy, busy.
- He makes two or three major speeches a year, and is deeply concerned about governmental controls and free enterprise.
- He participates actively in industry affairs and councils, holds a variety of directorships with both related and non-petroleum firms.
- His home life is cramped, because of his diverse activities and travels but he still finds time for civic interests and hobbies, of which outdoor affairs, such as hunting, fishing, and golf, predominate.
- He yearns and strives constantly for privacy in his personal life, and isn't exactly enthusiastic about being in the business limelight constantly.
- But all in all, there are major benefits: An annual income in the six-figure bracket, and the status of

Here they are . . . The 25 top companies, the chief executive officers . . . and how they started in the oil business

Seven of the industry's chief executive officers started their careers in the marketing branch.

Of these, six began in service stations, or as sales trainees. The seventh got his first taste of oil high up: His initial employment in oil was as a vice-president in charge of domestic marketing.

Five owe their beginnings to refining, and five others can trace theirs back to exploration or production, including the backbreaking work of roustabouts.

Three more came into oil via the legal route.

One man really started at the top—as an oil company president—and he's been up there ever since.

Gross incomes were used by PETROLEUM WEEK as the basis for its selection of the industry's top 25 companies.

Here's the lineup, company by company, with gross incomes, chief executive officers, and their first jobs in oil:

Company	Gross Income in 1959 (Thousands	Chief Executive Officer	First Oil Industry Job
Jersey Std.	$8,714,061	M. J. Rathbone	Refinery engineer
Gulf Oil	3,202,773	W. K. Whiteford	Roustabout
Socony Mobil	3,156,642	A. L. Nickerson	Service station
Texaco	2,830,796	A. C. Long	Service station
Indiana Std.	1,980,779	J. E. Swearingen	Research chemist
California Std.	1,909,064	R. G. Follis	Roustabout
Shell	1,819,954	H. S. M. Burns	Geophysicist
Sinclair	1,246,363	P. C. Spencer	Lawyer
Phillips	1,179,247	K. S. Adams	Warehouse clerk
Cities Service	994,879	B. S. Watson	Rate evaluator
Continental	786,752	L. F. McCollum	Geologist-scout
Sun	746,265	J. N. Pew, Jr.	Traffic clerk
Pure	621,437	R. L. Milligan	Treasury staff
Tidewater	559,442	G. F. Getty II	Independent producer
Atlantic	541,274	H. Supplee, Jr.	Mktg. vice-president
Union	512,962	R. H. Taylor	Company president
Sunray	450,989	P. E. Taliaferro	Lawyer
Ohio Std.	396,638	C. E. Spahr	Chemical engineer
Ohio Oil	349,472	J. C. Donnell II	Refinery helper
Kentucky Std.	307,858	W. C. Smith	Sales trainee
Ashland	300,644	(R. S. Blazer,)E. F. Wells	Sales trainee Sales trainee
Richfield (L.A.)	269,932	C. S. Jones	(not available)
Skelly	257,688	D. H. Miller	Service station
Signal	194,245	S. B. Mosher	Independent refiner
Amerada	102,367	A. Jacobsen	Legal staff

Came Up the Ladder the Hard Way

being the bossman of the entire company.

More than half of the present crop of chief executive officers of the top 25 companies hit the presidential jackpot in their firms while still in their thirties or forties.

Six of the executives were still in their thirties when they were elected presidents of their companies.

This group included Signal's Samuel B. Mosher, Tidewater's George F. Getty II, Phillips' K. S. Adams, Ohio's J. C. Donnell II, Union's Reese H. Taylor, and Indiana Standard's John E. Swearingen.

Getty was only 33 years of age when he was named president. Adams, Donnell, and Taylor were 38, while Swearingen was 39. Mosher bested them all, however. He founded his own independent refining company as a young man, and has been at its helm ever since.

Nine others reached the presidential office in their forties. These were Ralph G. Follis, Standard Oil Co. of California, at 43; Charles E. Spahr, Standard Oil Co. (Ohio), and Rexford S. Blazer, Ashland Oil & Refining Co., at 44; L. F. McCollum, Continental Oil Co.. at 45; H. S. M. Burns, Shell Oil Co., at 47; Henderson Supplee, Jr., Atlantic Refining Co., at 48; and A. C. Long, Texaco Inc., at 49. C. S. Jones, of Richfield Oil Corp. (L.A.), and Don H. Miller, of Skelly Oil Co., made it in their forties too, but both are reluctant to talk about their ages.

Dean of the current group of chief executive officers is Sun Oil Co.'s J. N. Pew, Jr. At 74, he's twice the age of the youngest man, Tidewater's Getty. Pew, however, is one of the relatively few men in the industry who can wear a gold pin representing 50 years of service to oil.

Although there's no set rule on which title the chief executive officer should have, the majority favor president over chairman.

In some companies there is a policy, while others vary to suit the occasion. In the top 25 companies, however, 14 chief executive officers currently are presidents, and the balance are chairmen.

Jersey's RATHBONE

The two jobs that M. J. Rathbone holds—currently and concurrently—automatically tab him as petroleum's No. 1 executive and, unquestionably, its most powerful leader. His full-time occupation is that of president and chief executive officer of the world's largest industrial corporation, Standard Oil Co. (N.J.). His secondary task is that of guiding the destinies of the American Petroleum Institute, the nation's largest oil trade association. He was elected API chairman last November and, according to tradition, still has another year to go.

Rathbone, in his own words, "can't remember when I didn't want to be an oilman." His father was a Jersey Standard employee, too, and his enthusiasm for his work as a refinery manager in Parkersburg, W. Va., affected and infected his son's early thinking.

Young Jack majored in chemical engineering at Lehigh University, and went to work as a design and drafting engineer in the Baton Rouge refinery of the old Standard Oil Co. of Louisiana, now the Esso Standard division of Humble Oil & Refining Co.

Ambitious, energetic, and skillful, he earned a succession of promotions to the presidency of the Louisiana company.

In 1944, when the Louisiana company was merged with Esso Standard Oil Co., Rathbone moved to New York as Esso's president. Five years later he made the Jersey board. He was elected president of the parent company in 1954, and its chief executive officer last spring when Eugene Holman retired.

Jersey's Rathbone is 60. He is a powerful man physically, of rugged appearance. He exudes strength, yet he is reassuringly informal, with a polished politeness to match. Among his assets are an ability to think rapidly and to speak concisely, and a willingness to fight for his convictions, no matter what the odds or the challenges.

His demeanor commands almost instant respect—yet there is nothing stuffy or arrogant about this man whose greatest delights in life are his children and grandchildren.

The tight schedule that paces everything he does has restricted many of his outside activities. But he still manages to find time for API affairs, industry committee obligations, governmental relations, and a limited number of civic interests.

He's a director of American Telephone & Telegraph Co., Prudential Insurance Co., and Morgan Guaranty Trust Co. He's traveled the world over, many times, keeping tabs on Jersey's farflung operations.

The responsibilities he bears as head of the world's biggest oil company are crushing—yet any time you see him in person, there are always a soft smile and an easy-going manner that make it appear as though he hasn't a worry in the world.

continued ▶

Gulf's WHITEFORD

It took William K. Whiteford 30 years on the nose to go from the oil fields of California, where he started as a roustabout, to Pittsburgh, Pa., and the presidency of Gulf Oil Corp. Included in this transcontinental hop was a nine-year layover in Canada, as president and chairman of British American Oil Co., Ltd.

Burly, personable, and rated by his associates as a gifted man in the art of moulding a corporation's character, he is nevertheless a publicity-shy individual who backpedals furiously to stay out of the limelight.

Whiteford, who will be 60 later this month, is a native of Los Angeles and an engineering graduate of Stanford University (he worked his way through as a dishwasher and milkman). He started with Shell Oil Co. in California, and switched over to Barnsdall Oil Co. as a production engineer one year later.

Eight years more saw him moving up to the vice-presidency of Barnsdall's Mid-Continent division. British American looked him over, and in 1935 chose him as executive officer of its Tulsa producing company. He did such a bang-up job with this firm that he was promoted to the Toronto headquarters as executive vice-president in 1942, and made president in 1943. In 1951, he moved up to the chairmanship, and in the same year was elected a director and executive vice-president of Gulf. Two years after his arrival in Pittsburgh, Whiteford achieved the presidency of this firm. Last month, he was elected chairman.

Although Whiteford spends much of his time concentrating on Gulf's affairs, either in this country or elsewhere in the world, he does take respites here and there to relax. His hobbies are tennis and skeet shooting, with the latter overshadowing his interest in the net game.

Whiteford holds several directorships, including Jones & Laughlin Steel Corp., Procter & Gamble, General Motors, Mellon National Bank & Trust Co., and International Nickel Co. of Canada, Ltd. He has an honorary doctor's degree from Hobart College, and is a trustee of the University of Pittsburgh.

Socony's NICKERSON

When A. L. Nickerson was about ready to graduate from Harvard University in 1933, he made up his mind that he'd like to work in one of four basic industries: steel, oil, timber, or aluminum. The death of his father prompted him to stay in New England, and since the old Socony-Vacuum Oil Co. was the leader of the four basic industries in that area, he chose it.

His first job in a Brookline (Mass.) service station was as a pitman, for which he earned $19 a week. Subsequently, he became an attendant, a shift manager, and finally, station manager. The big turning point came in 1936 when he was picked for management development in a new company training program. Within five years he had earned a succession of promotions to New England division manager. He spent a brief spell with the War Manpower Commission in World War II, then returned to New York as an assistant general manager in the marketing department. In 1945 he was sent to England where, as chairman of Vacuum Oil Co., Ltd., he developed plans that resulted in the affiliate's winning back its prewar eminence.

The next year, at the age of 35, he was back in New York, a member of the board of the parent company, and executive in charge of domestic marketing. He took on a foreign trade portfolio in 1951, and was elected a vice-president at the same time. He was made president in the summer of 1955, and chief executive officer not quite three years later.

Associates say the key to Nickerson's personality is his strong sense of competitiveness. But you have to watch closely to spot it, for his extreme courtesy and considerate manner toward others often conceal it. He's regarded as a "doer" and a listener, yet words don't take him in. Says one associate: "He can spot the kernel in the corn faster than anyone I know." He's a fast-mover, too—witness the comment of a Socony executive: "I tried to follow him around a refinery one day. He ran my tail off."

Physical fitness is a preoccupation with the lithe, softspoken executive. He was a college oarsmen, and has kept at it as a hobby. In wartime England, he spent his spare time sculling up and down the Thames—raising the eyebrows of some Londoners who thought this rather strange for the chairman of an oil company. He loves sailing, and he and his family take to the sea for relaxation when his busy schedule permits.

New Englander by birth, his basic philosophy is that of the area: hard work, self-reliance, hard work, honesty, and hard work. He travels extensively for Socony Mobil, puts in a modest 8½-hour work day, but lugs a briefcase full of company reports home with him almost every night.

continued ▶

HUMBLE COREXIT

Save time and money previously lost to internal corrosion: use Humble COREXIT . . . COREXIT effectively and economically prevents internal corrosion in pipe still overhead, distillation towers, vapor recovery systems and other refining units. COREXIT will reduce or completely eliminate plugging or fouling. This protection against sludge, scale and corrosion cuts non-productive downtime to a minimum. For complete information on technical services and products, contact your Humble salesman.

HUMBLE

HUMBLE OIL & REFINING COMPANY

Texaco's LONG

Two brief comments—separated by nearly three decades and a thousand miles—tell the story of A. C. Long, chairman of Texaco Inc., in a nutshell.

A subordinate in the headquarters office provided this thought-provoking characterization of him recently: "He has 20/20 executive vision. Nothing gets by him."

Back in the early thirties, the superintendent of service stations in the Atlanta division office astutely entered a near-similar observation about him in a job evaluation report: "This employee is an exceptionally bright young man."

Long's original vocation in life was to be a Naval officer. He achieved that ambition, graduating from the U.S. Naval Academy in 1926, and serving until 1930.

A Floridian by birth, his first oil industry job was with a service station in his home state.

The bright young man moved along in a hurry. He was transferred to the export department, and served in managerial capacities in Dublin and The Hague until 1940. During World War II he returned to the Navy, serving in South America and Washington, and in London as a petroleum coordinator for the Allies.

Back with Texaco again, he rose swiftly to vice-president in charge of foreign operations, eastern division; executive vice-president in 1951; president in 1953; and chairman and chief executive officer three years later.

Like many other fast-moving executives, he shows up early at the office, and frequently is the last to leave at night. His shrewdness as a dealmaker and his administrative skills have won reluctant respect from his competitors wherever he has gone.

Long, now 56, is a director in several subsidiary and affiliated companies of Texaco Inc. He is a trustee of the Presbyterian Hospital in New York, a director of API, the National Industrial Conference Board, the Federal Reserve Bank of New York, Freeport Sulphur Co., and the Equitable Life Insurance Society, and a member of the Commerce Dept.'s Business Advisory Council.

In a ceremony held at The Hague in 1955, Long was presented with the Commander's Cross of the Order of Orange Nassau. Boston College has also honored him with an honorary law degree.

Long owns a farm near Richmond, Va., and, when his schedule permits, he and his wife scoot down there from New York to enjoy their leisure.

Indiana's SWEARINGEN

Of the many stories told about John E. Swearingen's phenomenal career with Standard Oil Co. (Ind.), one of the more fascinating is that when he reported for work in 1939, company officials did not know what to do with him at first because—as his family related afterwards with obvious humor—they were afraid of violating the child-labor laws.

This undoubtedly is farfetched. But it is an acknowledged fact that the Indiana company signed up the brilliant young Swearingen before he finished college, and that his parents had to sign a release for his first wages because he was only 20 at the time.

Swearingen, in 19 short years, sped up through the ranks to the presidency, a post he achieved in 1958 at the age of 39. Less than three months ago, he succeeded Frank O. Prior as chief executive officer, and he was still a few weeks away from his 42nd birthday.

Respect for learning was deeply implanted in the Swearingen family. His father served as South Carolina's State Superintendent of Education for 14 years, and his mother taught high school. This interest is reflected in Swearingen's own record. He entered the University of South Carolina at the age of 16, where he studied chemical engineering, and had a master's degree from Carnegie Institute of Technology by the time he was 20.

His first job was with the Whiting research laboratories as a chemical engineer. He did right well, and in 1947 declined an administrative assistant's post to transfer to Stanolind Oil & Gas Co., now Pan American Petroleum Corp.

There he learned the production phase of the oil business. Promotions came rapidly—a directorship of Stanolind in 1951, and a return to the parent company in Chicago the same year as general manager of production. He was named a director of Indiana Standard in 1952, vice-president in charge of production two years later, and executive vice-president two years after that.

Little comment is ever heard among employees or close industry friends about his private life, for this is kept entirely separate from his business life. He lives quietly, and participates in community affairs when time permits. He also enjoys hunting, trapshooting, fishing, and golf.

He's an API director and a trustee of Carnegie Tech., as well as an active member of the American Chemical Society, the American Institute of Chemical Engineers, and the American Institute of Mining, Metallurgical & Petroleum Engineers. He is a member of Phi Beta Kappa and Tau Beta Pi, but doesn't wear his keys. Perhaps the best characterization of him is that of a news magazine: "He's a shirtsleeves guy, but forthright, concise, deliberate, and quite mature."

continued ▶

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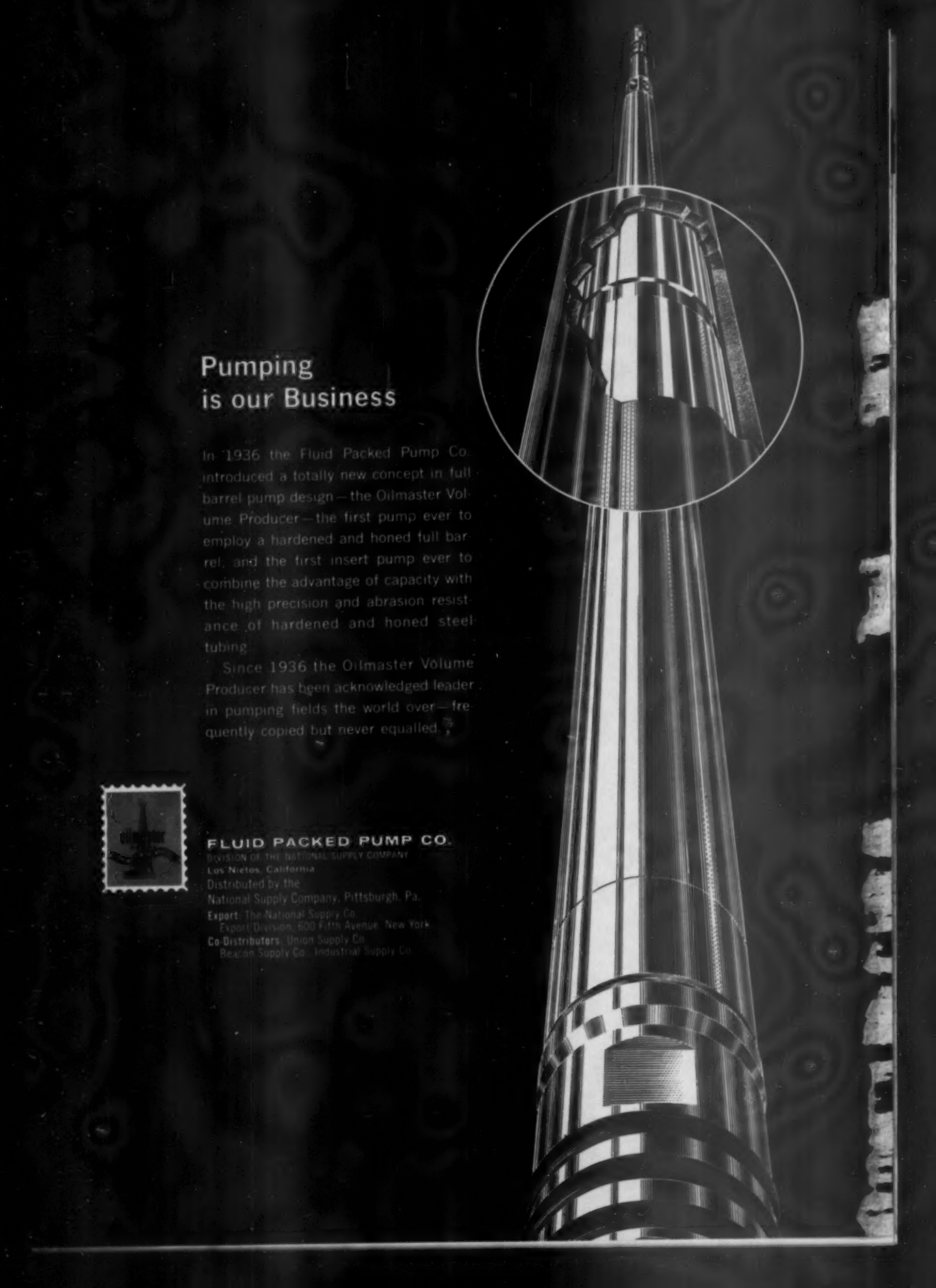

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Since 1936 the Oilmaster Volume Producer has been acknowledged leader in pumping fields the world over—frequently copied but never equalled.

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Socal's FOLLIS

Two years ago, a national magazine made this pithy summation of Ralph G. Follis, chairman of Standard Oil Co. of California: "Reserved and formal, Chairman Follis runs Socal without backslapping. A Princeton graduate ('24) and the stepson of a former Socal president, Kenneth R. Kingsbury, he started out as an engineer's helper. He has a passion for avoiding distracting detail: There are no papers on his desk, no pictures in his huge office, and no briefcase in his hand when he goes home at night."

The magazine made a point of stating, in another part of the story, that Follis' relationship to the former president neither retarded nor accelerated his rise through the ranks. He is acknowledged by the industry as an outstanding manufacturing executive, and an authority on research.

Follis was only 17 when he started to work in the oil fields near Taft, Calif., as a field hand. He was graduated from Princeton with a degree in geology, worked his way up to $225 a month as a driller's helper, but jettisoned it to accept $157.50 per month with Socal's engineering department. He absorbed all he could about refining and research, moving up the ladder steadily, so that by 1942 he had been named vice-president in charge of refining and research in the San Francisco office. The presidency came three years later, and the chairmanship in 1950.

Nothing ventured, nothing gained seems to be his philosophy. He was instrumental in the formation of California Research Corp., and, for the past decade, has been anything but a deskbound executive. He crosses the U.S. at least once a month, and may pop up almost anytime in any of the 75 nations of the world where Socal has interests.

Follis, who is 58, likes to fish and hunt, but feels that the oil industry itself has too much to offer for a man to need hobbies as palliatives for boredom. Follis is a busy, busy man, both within and without the company. He holds directorships on several bank boards, is a director of API and Stanford Research Institute, a trustee of the International Chamber of Commerce and the National Industrial Conference Board, vice-chairman of the National Petroleum Council, and a member of a variety of church, educational, and civic groups.

Shell's BURNS

H. S. M. Burns' official biography completely ignores the incredible charm, wit, and knowledge that the Shell Oil Co. president possesses and utilizes as occasions may dictate. Stories about Burns, and by Burns, are almost legend in the industry, particularly his skills and his comments as a presiding officer at meetings, or as a toastmaster at luncheons and dinner gatherings.

The full name of this husky, ruddy-complexioned, 60-year-old Scotsman is Henry Stuart Mackenzie Burns. To his friends and business associates, however, he is just plain "Max." His educational background is a key to the breadth of his outlook. He studied geology and chemistry at the University of Aberdeen. After his graduation, he won the Ferguson scholarship to Cambridge University, where he subsequently received his master's degree in mathematics and physics.

His first employment in oil was as a geophysicist in California with Shell. Having a yen for sales, however, he transferred to the marketing side, and worked as a salesman, a service station hand, and a tank-truck helper. He shuttled back and forth between San Francisco and Seattle in a series of promotions that led him up to general sales manager. He took another big plunge and went to South America, where he soon wound up as general manager of Shell's affairs in Colombia.

He returned to the U.S. in 1946 as a senior vice-president, and was elected president the following summer.

He is a director and past chairman of API, a trustee of the National Safety Council, and a director of the New York Philharmonic Society. For many years, he was chairman of API's public relations program and, as such, put his energetic mind and abilities to work on behalf of the whole industry.

In 1956, the genial Scotsman went back to Aberdeen, where he was awarded an honorary degree of Doctor of Laws. The following year, St. Louis University gave him an honorary Doctor of Science degree. Several weeks ago, Shell announced that Burns would retire Jan. 1 and would be succeeded by Monroe F. Spaght as president.

Sinclair's SPENCER

A year or so ago, P. C. Spencer, chairman of Sinclair Oil Corp., told an interviewer that he had been raised in Cody, Wyo., and had helped the family's finances by herding the town's

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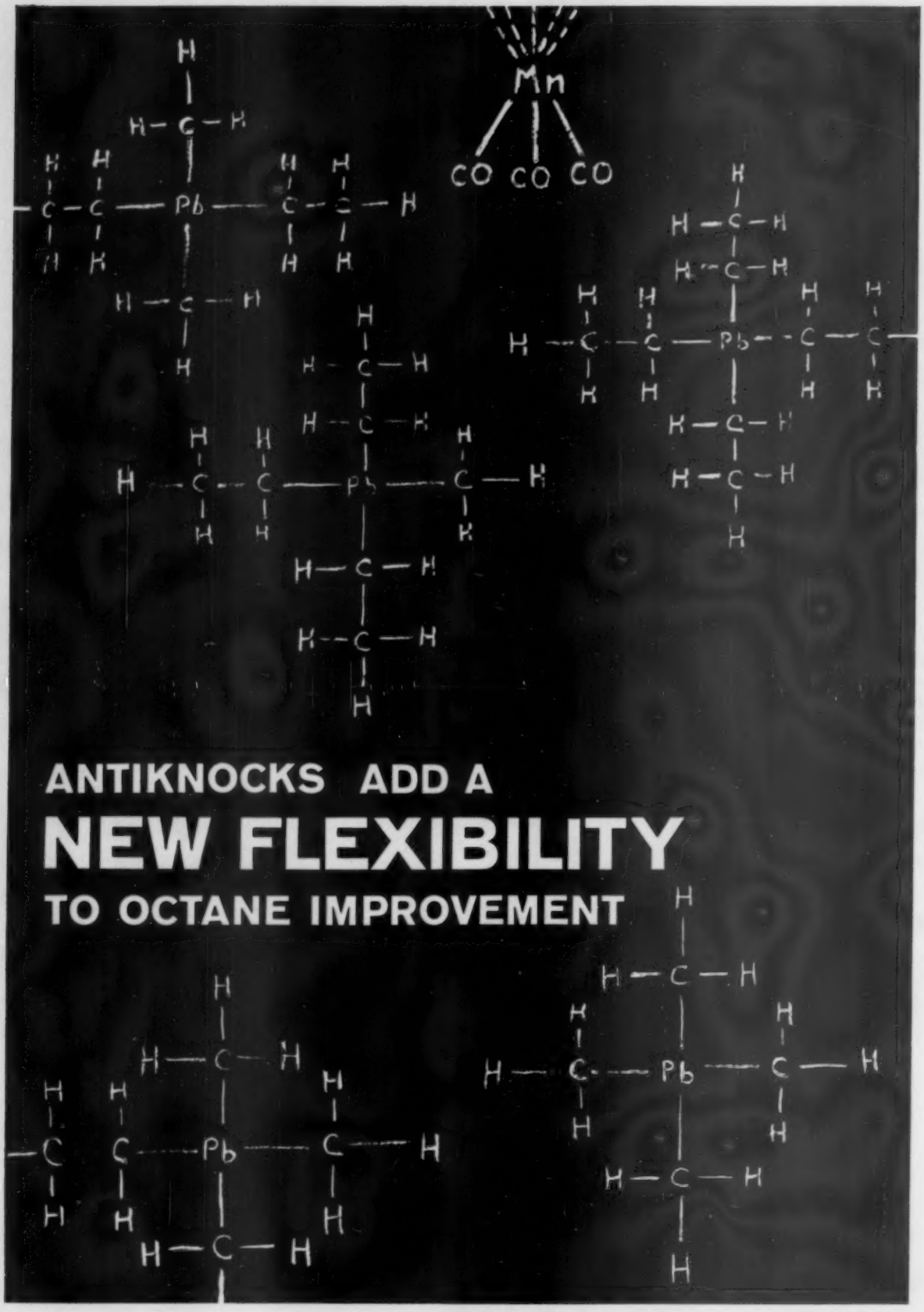

ANTIKNOCKS ADD A NEW FLEXIBILITY TO OCTANE IMPROVEMENT

RECENT DEVELOPMENTS in antiknock compounds have opened new areas for the refiner to consider. Just as raising the allowable limit of TEL concentration provided more latitude, new antiknocks are now available which permit even greater flexibility.

Bonus from TEL

One of the most important developments in the use of TEL came about during 1959—extending the limit to 4 ml per gallon. As a result, the average premium gasoline refined today can be increased from current levels by one and a half Research octane numbers through TEL alone. Similarly the Motor octane number gain is almost two numbers greater. Furthermore, the Road octane gain from TEL is greater than is indicated by either of the laboratory methods.

In the case of regular gasoline, almost two octane numbers can be gained through increasing TEL from present average concentration to 3 ml. The 4th ml of TEL makes possible additional octane improvement.

Tetramethyllead

Research on tetramethyllead—first of a new group of lead alkyls to be offered commercially—shows that in highly aromatic gasolines or in engines prone to induce fuel segregation in the manifold, TML can be considerably more effective than TEL in its road performance.

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Now three more "Ethyl" antiknock compounds are available: MLA 250, MLA 500 and MLA 750—all produced from mixtures of TML and TEL processed to equilibrium composition. Current tests show that these mixed lead alkyls are selective in their ability to provide superior road performance, dependent upon such factors as fuel composition.

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Another compound, Motor 33 Mix—a manganese-lead antiknock—can supply several additional octane numbers when used in certain fuels.

The Future

With this variety of antiknock compounds, each with its particular value and application, maximum flexibility is offered to the refiner. Not only do the antiknocks offer cost savings and delay capital expenditures, but they can provide benefits that cannot be obtained any other way.

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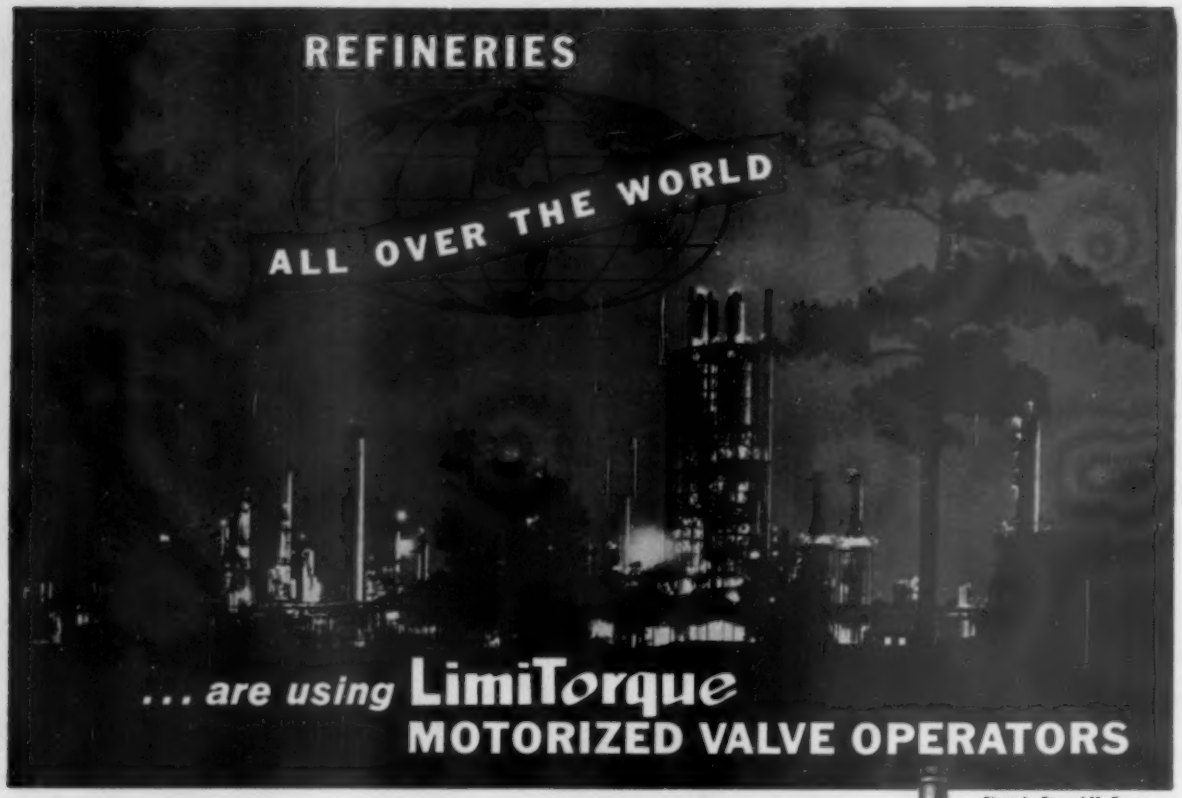

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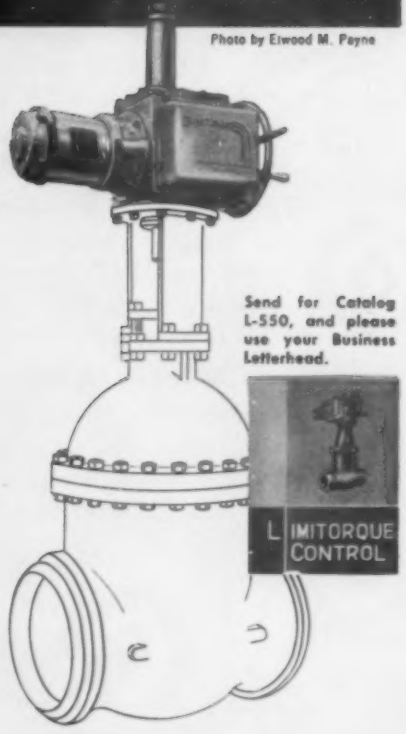

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Golden Rule Philosophies

"The way to make an employee realize he is a partner in the business is to keep him informed of the decisions, policies, and problems of management, and seek his opinions and suggestions."

R. H. Taylor, chairman, Union Oil Co. of California

"If I had to narrow it down to one word, the one quality that I'd like most to see in an employee is loyalty. A company isn't a cold-blooded outfit. It's people—warm-hearted, decent people who are all working for the same goals. Too many people today are victims of the 'welfare state' kind of thinking."

P. E. Taliaferro, president, Sunray Mid-Continent Oil Co.

"The old-fashioned virtues of industriousness, persistence, and determination, have not been and cannot be replaced by automation and electronic computers. They are as pertinent to success in industrial life as they are to life in general."

J. C. Donnell II, president, Ohio Oil Co.

milk cows at $2 per cow per month. What, said the interviewer, do the initials P. C. stand for? "Percy Craig," responded Spencer shyly, "a helluva name for a cowboy, no?" Spencer is like that. Normally reserved and dignified, he can nonetheless chuckle at himself, and life in general.

Spencer, now 67, is a lawyer by profession, having obtained his degree at the University of Nebraska. He earned the money for his education first as a reporter, then editor, on the Cody Enterprise, a newspaper founded by Buffalo Bill, noted Wild West scout and showman.

He didn't get around to practicing law for eight years, however, working instead in Washington as a senator's secretary. When he did hang out his shingle in 1922, he learned enough about the Wyoming oil industry to win appointment as general counsel of Producers & Refiners Corp. This company was acquired by Sinclair in 1938, and Spencer went to New York as a member of the legal staff.

By 1946 he had become general counsel of the corporation. A year later, he was elected president of Sinclair Refining Co. Next came the executive vice-presidency of the parent firm, and finally the presidency in 1949, as successor to the founder, H. F. Sinclair. He became chairman when Sinclair retired.

Among his industry activities are long-term participation in the affairs of the old American Petroleum Industries Committee, and committee leadership with the National Petroleum Council. He headed API's Transportation Division as its vice-president for two years, and the board of directors as its chairman for two years. Currently, he is API's treasurer.

Though he isn't a joiner, he has long been a moving force in the Boys Clubs of America.

Phillips' **ADAMS**

The most distinguished characteristic of K. S. (Boots) Adams is the "go for broke" drive that permeates everything he does or touches. Business associates say this competitive push can be traced clear back to his college days at the University of Kansas, where he was one of its best athletes. At any rate, young Adams started out in Bartlesville, Okla., in 1919 as an ice-wagon driver, and 18 years later, as a young man of 38, he was elected president of Phillips Petroleum Co. He succeeded founder Frank Phillips as chairman and chief executive officer in 1951.

Boots' nickname stems back to his boyhood days in Horton, Kan., and the red boots he so proudly owned and displayed. His first job with Phillips, in 1920, after his brief swing at the ice wagon chore, was as a warehouse clerk. From there he went to the accounting department, and then to the treasury department. Phillips chose him as his assistant in 1932, and paved the way for his election as president in 1938.

Adams, shortly after he joined Phillips, was the organizer of the employee basketball team, which since has acquired world fame as the Phillips 66ers, and has had players on four U.S. Olympic teams. Adams himself was elected to the Helms Athletic Foundation Basketball Hall of Fame.

Like any executive, his days are busy and complex—but he finds time for his farm and ranch, where he experiments constantly with cattle and petrochemicals. He's a 33rd-degree Mason, a member of the DeMolay Supreme Council and of the Cherokee Boy Scout Council. He's also a past president of the local Chamber of Commerce, and a past commander of his American Legion Post.

He's been an API director for years, and a board member of the Federal Reserve Bank of Kansas City.

It goes without saying that honors have come his way. To name a few—he was awarded an honorary Doctor of Laws degree by Drury College in 1955, and by Oklahoma Baptist University in 1959. He was inducted into the Oklahoma Hall of Fame in 1958. In the same year, he received the General Grand Chapter Award of Royal Arch Masons—an exceptionally high honor. The University of Kansas has given him its Distinguished Alumni Award, and the University of Oklahoma its Distinguished Citizen Award.

It was the Osage Tribal Council, however, that combined a ceremony of honor with the bestowal of a name to capture in a single word the compelling drive that is so typical of Adams. The tribe made him an honorary member in 1952, and gave him the name of "Ses-sah-moi," which means "Leader of Men."

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Cities Service's WATSON

As a boy, Burl S. Watson dreamed of the day when he could become an electrical engineer. He achieved that goal, via the University of Alabama. Eighteen years later, he was separated from his boyhood dream by an Act of Congress. But it really didn't make too much difference then, for Watson was well on his way as a rising executive with Cities Service Co.

Watson, son of an Alabama cotton farmer and one of eight children, started as a rate-evaluation clerk with Toledo Light & Power Co., a Cities Service subsidiary, following his graduation from college. Five years later he was promoted to the New York headquarters, where W. Alton Jones, then a vice-president, spotted him as a comer and made him his assistant. When Congress passed the Public Utility Holding Company Act in 1935, Cities Service chose oil and gas as its principal business interest, thus divorcing Watson from his original ambition.

Throughout his long career with Cities Service, Watson, now 67, has become almost a legend for his telephone-itis. He never writes, wires, or goes anywhere if a telephone call can do the trick. As many as 150 calls a day come over his phone as he seeks answers or needles and inspires the people who work for him to get things done. Watson credits the phone with enabling him to make quick decisions and to get quick decisions from others.

Watson was elected to the board in 1940. Other executive assignments followed. As an officer and director of various Cities Service companies, his interests have ranged from lower Manhattan realty holdings to the broad sweep of petroleum and natural gas activities. He rose to the presidency in 1953 and to the chairmanship in 1959, succeeding his old friend and colleague, Jones.

Shooting and gardening are his hobbies, and for many years his prize-winning vegetables were the talk of the neighborhood. But demands on his time are so heavy that he hasn't been able to devote too much time in recent years to his sideline interests. He has always extended a ready hand to charitable organizations, and has participated in Red Cross, polio, and Salvation Army fund-raising drives.

Perhaps the best comment about him is one that appeared in a Cities Service magazine years ago: "Avoiding the spotlight himself, he gets things done by picking able assistants and giving them a free hand. He sometimes fumes at delay, is impatient of excuse, but is always ready with a word of praise for a job well done."

Conoco's McCOLLUM

Dynamic is probably the only adequate word that can be used to describe L. F. McCollum, president of Continental Oil Co. A firm believer in getting there "firstest with the mostest" in everything he does, he is an unusually intense man with an incredible capacity for hard work, and a staggering list of activities and interests.

McCollum jettisoned a most promising career with the world's largest oil company in 1947 to tackle an awesome—but far more challenging—task, that of rescuing ailing, faltering Continental Oil from the administrative and leadership troubles that were besetting it.

A graduate of the University of Texas with a degree in geology, he started out with Humble Oil & Refining Co. His technical proficiency soon led to his appointment as manager of exploratory work for Carter Oil Co. His land-leasing tactics are almost legend in that part of the country. His unusual managerial qualities took him swiftly to the top. From the presidency of Carter, he went to Standard Oil Co. (N.J.) as assistant coordinator, then coordinator, of the parent firm's global production activities.

The road to success in the Jersey organization was wide open, and it was only a question of time for the energetic young man to continue his rise. That's when the Continental challenge materialized. In December, 1947, at the age of 45, he flew to Ponca City with a ten-year contract in his pocket to see whether his magical managerial touch could save the old company from an untimely demise.

Things happened fast, as they usually do when McCollum enters a picture. He rebuilt the organization, giving substance to his belief that people, not brick and mortar, make a successful business enterprise, and that electronic computers, no matter how complex, are no substitute for business judgment and good management.

Throughout all this, his industry activities increased steadily, and he won more recognition as one of petroleum's farsighted thinkers. In 1957, a national magazine tabbed him as one of "America's Fifty Foremost Business Leaders."

He's a member of the API board, the National Petroleum Council, and many other industry organizations. He is vice-chairman of the Business Advisory Committee of the Commerce Dept., chairman of its Committee on International Trade & Commerce and its Export Expansion Committee. He's a director of almost a dozen corporations, including Morgan Guaranty Trust Co., the old J. P. Morgan & Co.

McCollum whirs around like a human dynamo—and the end is nowhere in sight. His hobbies, when he gets a chance to pursue them, are hunting and golf, in that order.

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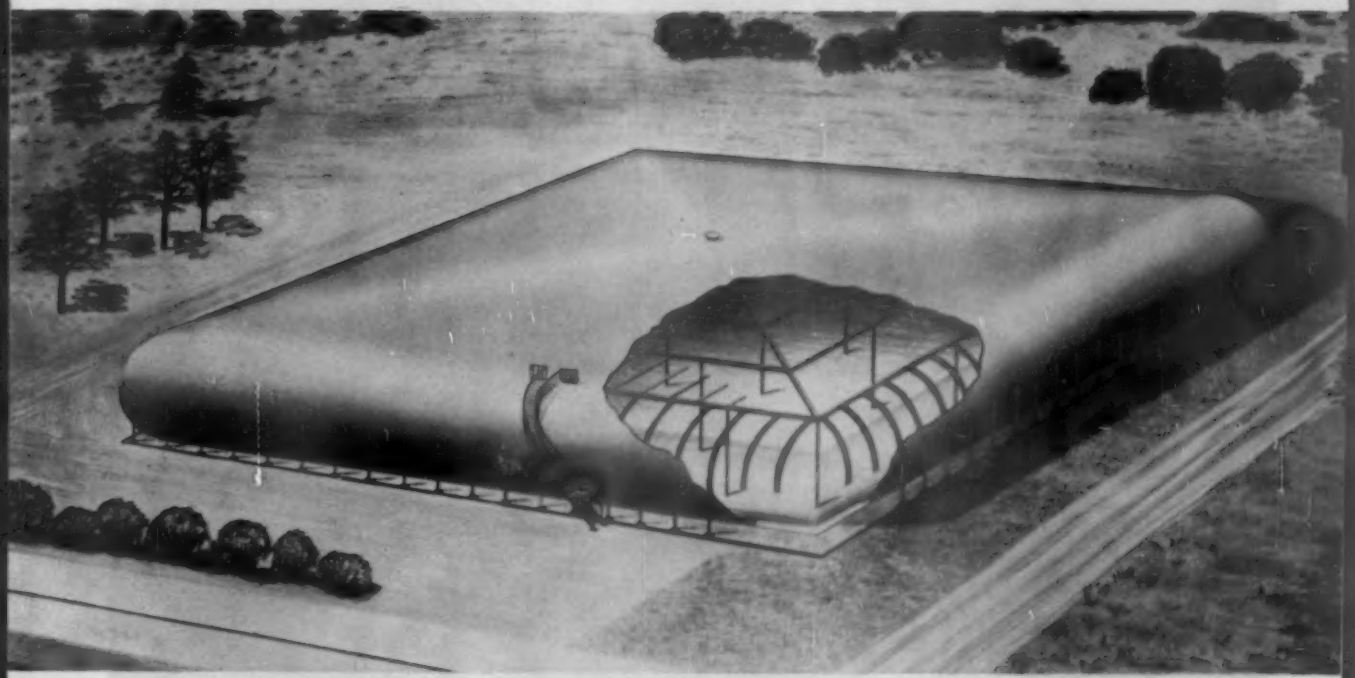

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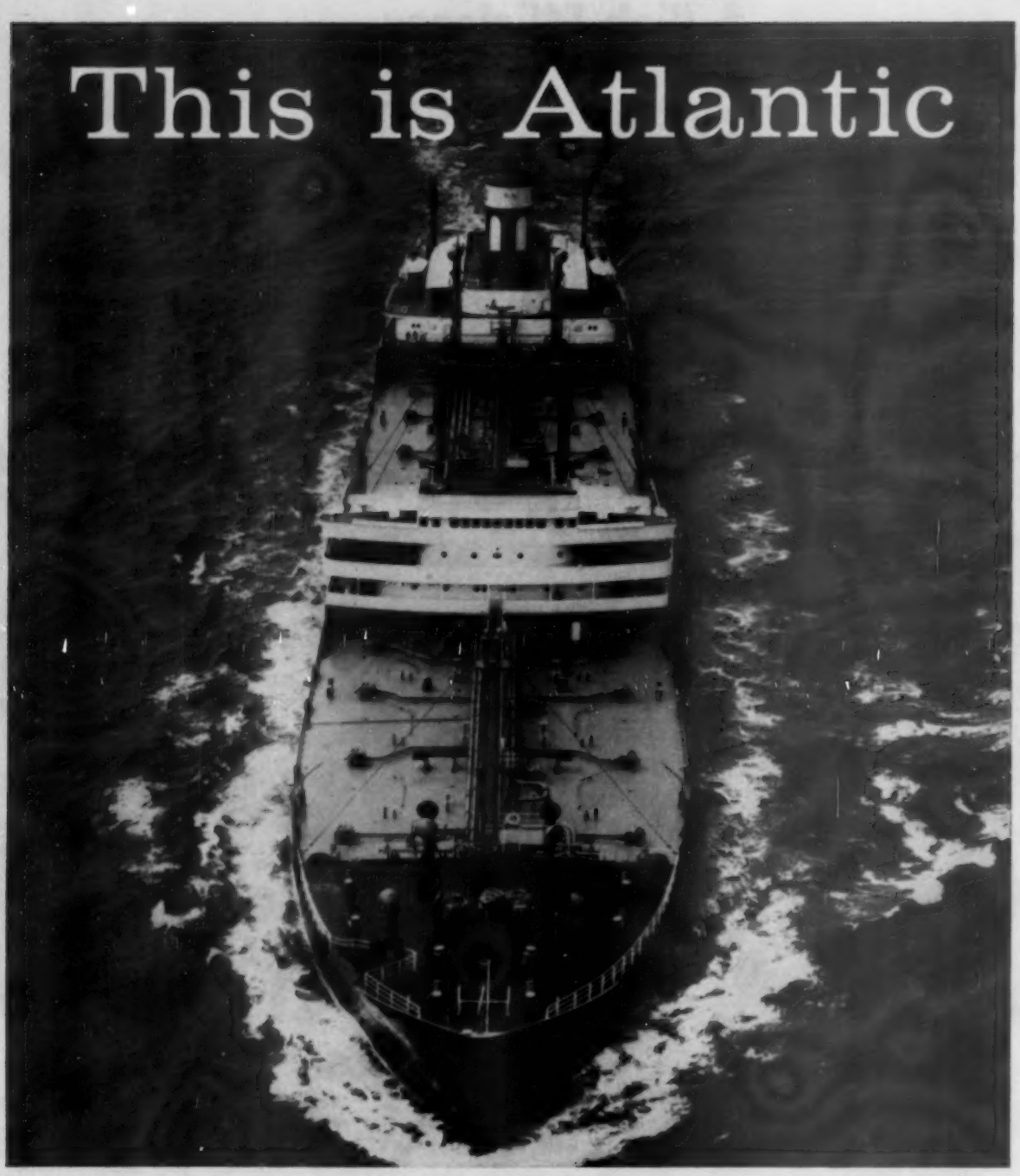

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Sun's PEW

A few days ago, Joseph N. Pew, Jr., observed his 74th birthday. Observed, not celebrated, is the appropriate word, for "J. N.," as his business associates affectionately call him, has a strong dislike for any "fuss and feathers"—over business accomplishments or personal achievements.

He has always been that way. A shy, sensitive man, he has stayed in the background as much as possible, content to do his bit, and push his associates forward for the place in the spotlight. It's almost ironic, but when he was elected chairman of Sun Oil Co. in 1947, that was the only real title he ever had with the company that his father founded. Throughout the years, his executive status was that of a vice-president—sort of a "Vice President in Charge of Thinking."

Pew, with a Cornell University degree in engineering to his credit, went to work for Sun in 1908 in the purchasing department. It wasn't long before he complained to his father that no clearly defined job had been given him—and he got a lesson that stayed with him and guided his actions forevermore. "Joe, I can't give you a job," his father said. "All that I can give you is the opportunity. You'll have to make your own job."

Pew's early experiences embraced leasing, drilling, pipeline laying, and similar activities in this country and in South America. He was 25 years old when his father died in 1912, and his brother, J. Howard Pew, became president of the firm. "J. N." became his brother's right-hand man, a post he held for 35 years.

He was instrumental in the development of Sun Shipbuilding & Drydock Co. As head of the thinking-up department, he created many ideas and projects that enabled Sun to grow with the times.

Through the years, Pew has devoted all of his interests to his company. He has eschewed associations with firms or undertakings not directly related to the company, although he received many invitations to directorships of banks and other enterprises. The only business organization, other than Sun, in which he has actively participated has been API.

A man of substantial financial means, he has, nevertheless, remained aloof from the superficialities of society. He maintains a healthy interest in spectator sports, and occasionally indulges in his hobbies of golf, fishing, and duck hunting.

He is an ardent advocate of individual freedom, and has always voiced strong opinions in industry councils on behalf of the free market economy, and against all forms of government intervention.

Pure's MILLIGAN

From piano parts to oil, to finance and accounting then executive administration, is the route that Robert L. Milligan followed to the presidency of Pure Oil Co.

Never a man to do things halfway, he believes in the direct approach, preceded, of course, by careful analysis and preparation. That applies to both his business and his personal interests and ambitions.

A measure of the man is a woodworking project that he undertook several years ago. Impressed by the beauty of a dressing table in a Brazilian home, he asked a furniture designer friend to make him a set of drawings from the photographs that he had taken. Although he had never tackled woodworking before, he boned up on the subject, bought the necessary tools, and set to work. The finished dressing table, made of rock maple, would have been a credit to an expert.

That's the way he does things at Pure Oil, too.

Milligan's first job, after his graduation from Ohio Wesleyan University, was with the Fairbanks Co., in Springfield, Ohio, his home town. This firm manufactured the metal framework or "plates" for pianos. Diligently he went to work, and rose to superintendent, then vice-president and general manager.

In 1929, he abandoned piano parts for oil, and joined Pure Oil's treasury department. He was assistant secretary-treasurer four years later, treasurer in 1947, and a vice-president as well by 1949. His star continued to rise, and he was named executive vice-president in 1951, a board member in 1953, and president one year later. He succeeded Rawleigh Warner as Pure's chief executive officer earlier this year.

Milligan, now 60, is active outside the company, too. He is a director of a Chicago bank, Montgomery Ward and Co., American Steel Foundries, the National Industrial Conference Board, and, of course, API.

Church and educational trusteeships occupy some of his time too, and for a while he served on the Evanston (Ill.) Board of Education. Besides woodworking, Milligan's hobbies include photography, hunting, fishing, and golf.

Tidewater's GETTY

George F. Getty II is the youngest chief executive officer among the oil industry's top 25. He also holds the distinction of having achieved that

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exalted status at a younger age than any of his contemporary counterparts.

Getty was still two months away from his 34th birthday when he was elected president of Tidewater Oil Co. 2½ years ago. Now only 36, he is nevertheless rapidly gaining prestige in so-called top-brass circles. In the words of one veteran executive, who has been at the top of the heap for many years, "he's a lot smarter than most people think . . . and he's coming along fast . . . real fast." That's quite a feather in the cap of this young man who, as the boss's son, had royal prerogatives—and royal handicaps—from the start.

Getty began his career in the oil business in 1947, as an independent operator in California. The following year he became a producer when he discovered the South Crane oil pool in West Texas. In February, 1949, he signed with Pacific Western Oil Corp. (now Getty Oil Co.) and went to the Middle East where he served as manager of the Saudi Arabian division.

He returned to this country in the fall of 1951, and was named manager of Pacific Western's Mid-Continent division office in Midland, Tex. Next came a vice-presidency with Spartan Aircraft Co., Tulsa, a subsidiary of Pacific Western, and the presidencies of Minnehoma Financial Co. and Minnehoma Insurance Co., both Spartan subsidiaries. In July, 1955, he took on the additional responsibilities of executive vice-president of Pacific Western. He held all of these assignments until May, 1956, when he resigned to join Tidewater. He was promptly elected a director and a vice-president, and given the job of managing the eastern division. Two years later, he became president.

Prior to his oil career, young Getty attended Princeton University, and saw overseas service in World War II. He enlisted in the infantry in 1942, and won a second lieutenant's commission two years later. He spent 16 months in the Philippine Islands, Malaya, and Japan as a war crimes investigator. He was discharged in 1947 as a first lieutenant.

Getty is moving more and more in industry circles. He was one of the ten U.S. experts who toured Russia this past summer, and evaluated the Soviet Union's oil potentials. He is an API director, and a vice-president of the Western Oil & Gas Assn. Other directorships have included Getty Oil Co., Mission Development Co., Mission Corp., Skelly Oil Co., the Admiral State Bank of Tulsa, and the Los Angeles Y.M.C.A.

Atlantic's SUPPLEE

Henderson Supplee, Jr., president of Atlantic Refining Co., was an executive in the milk industry prior to his great adventure in petroleum.

He was well-established as president of the Philadelphia division of National Dairy Co., and a rewarding career lay ahead. But he resigned to go with Atlantic, and the reason for the metamorphosis had nothing to do with oil or money. It was just that he and his family refused to leave their beloved Philadelphia, even though a lucrative, more responsible executive post awaited him in New York.

The year was 1947. Atlantic's President Robert Colley had been searching for a skilled executive to run his marketing operation. He hired Supplee as vice-president, and within two years promoted him to executive vice-president. Supplee's rise to the presidency was meteoric, for that came in 1952—a scant five years after he had abandoned milk products in favor of gasoline and fuel oil. He was only 48 when he became top man.

Supplee's appearance is deceiving. Retiring, almost to the point of shyness, he is nevertheless a bold thinker, possessed of an innate ability to organize and manage, and an articulateness that enables him to project his ideas clearly and convincingly.

Supplee shuns personal publicity and pretense. As a vice-president of Atlantic, he drove a Cadillac at the company's request. When he became president, however, the Cadillac disappeared, and he took to driving a Ford again. Despite his quiet, orderly life, he is a man of prominence in his community. Among other things, he is a director of Princeton University—his Alma Mater, from whence he graduated in 1927 with a degree in literature—the Old Philadelphia Development Corp., the National Industrial Conference Board, the Greater Philadelphia Movement, and API. At the latter, he served two terms as vice-president for transportation, and currently holds many committee assignments. He's also a member of the National Petroleum Council, and is chairman and Federal Reserve Agent for the Federal Reserve Bank of Philadelphia.

Like many of his counterparts in oil, he regularly totes a bundle of work home in the evening. But he still finds time, over and above his business and civic affairs, to engage in some of his hobbies—fishing, golf, horseback riding, and photography. Horseback riding is almost a passion with him, and he usually gets in a bit of it every morning before arriving at his office at nine o'clock with the meticulous punctuality that marks his ways.

Supplee's guiding philosophy as Atlantic's chief executive is disarmingly simple: "We are not carried away by the idea of bigness," he says. "Our goal is not size, but strength."

Union's TAYLOR

When Reese H. Taylor was elected president of Union Oil Co. of California, it took the oil world by surprise for two very big reasons: (1) He was only 38 years old, and (2) he wasn't an oil man, knowing absolutely nothing about the industry in which

continued ▶

he ultimately was to become one of the towering leaders.

Taylor, a friendly, sharp-witted man of 60 who stands 6 ft., 4 in., is an engineering graduate of the University of California, although he spent the first two years of his college training at Cornell. He started as an iron worker for Consolidated Steel Co., quickly became production manager, and by 1933—just ten years after he went to work—he was president. Union Oil made him a board member in 1937, and, when its president retired suddenly in 1938, the board decided that the hard-hitting steel executive would make a wonderful president, if he would accept.

Taylor was, of course, a compromise nominee, for the board had been split by factionalism. But from the first day he walked into Union's headquarters at 7:45 a.m., and began to push buzzers, things happened fast. He applied to his new occupation the same administrative techniques and imaginative selling that had made him almost a legend in the steel industry. Union, ailing and facing a difficult future, rebounded swiftly under his deft leadership.

Taylor is an individualist whose actions sometimes have surprised both his company and his industrial colleagues. When he felt that neither API nor the Western Oil & Gas Assn. were serving a useful purpose for Union, he pulled his company out of both, and ordered his employees to sever their relations too. He since has returned to WOGA, but has shown no signs of relenting where API is concerned.

One of the most interesting management policies that Taylor introduced at Union is the company's attitude toward public relations and free enterprise. Convinced, after a stint with the War Production Board in Washington, that "businessmen have so much trouble in Washington primarily because the government people don't understand what makes business function," he launched an institutional advertising campaign that won wide acclaim. In fact, so many people clamored for copies of his free-enterprise advertisements that Union had to publish them in book form, and this already has run through dozens of editions.

Taylor moved up to the chairmanship of Union in 1956, but picked up the presidential chores again last spring when A. C. Rubel retired. He held both jobs until recently, when Dudley Tower was elected president to help him.

He's an ardent fisherman, tennis player, and all-around sports fan. He holds an honorary degree of doctor of laws from Loyola University, and his many and varied membership, directorships, and other activities are sufficient to fill a full page.

Sunray's TALIAFERRO

Paul E. Taliaferro and Sunray Mid-Continent Oil Co. were made for each other, right from the start.

Taliaferro, fresh out of law school in the grim days of 1931, was looking for a job. Sunray, just about broke, was in the market for an attorney who wouldn't put too much strain on the company's limited resources.

That was the beginning, for Taliaferro, of a career that has spanned 29 years of law and oil. An "old timer" in Sunray's executive ranks, he is nevertheless anything but old in age or outlook. He's only 55, and still pops up in his office on many a Sunday morning right after church to put in a couple of hours of work.

Taliaferro's name—both the spelling and the phonetics—often cause him minor problems. He's a Texan by birth, and his ancestors were English. And the correct pronunciation is Toliver, not Talia-ferro, as many people are inclined to think.

Taliaferro won his law degree in 1930 from the University of Tulsa, four years after he was graduated from North Texas State College. He joined Sunray as a general attorney, just about the time it went into receivership. Throughout the trying period of reorganization, he worked closely with then president Clarence H. Wright in steering it back to financial stability.

Their warm friendship and mutual respect never faltered through the years. Taliaferro was named a director in 1946, and executive vice-president in 1952, after having served also as a line vice-president, and assistant to the president. Just 18 months ago, he reached the presidency.

Sunray's chief executive officer isn't much for hobbies or sports, but he does get a real kick out of his church and hospital work. His favorite form of relaxation is TV, with emphasis on the Westerns. "It's sort of relaxing to see a big old fellow go around solving all of his problems with his fists," the genial executive observes.

Taliaferro's experience has taken him into all phases of petroleum, but he does have a secret yen. If, he says, he had to choose a single branch of the industry in which to work, he'd go into exploration or production. "It's the most interesting, most glamorous part of the oil business," he says. "Many other jobs become routine, but there's nothing ever routine about finding oil."

Sohio's SPAHR

Charles E. Spahr set a notable record at Standard Oil Co. (Ohio). In 18 years, including four spent in the Armed Forces in World War II, he zipped from the bottom to the top, achieving the presidency in 1957.

The people who know Charley Spahr, however, weren't surprised by

continued ▸

his rapid rise through the ranks. Sharp, possessed of a pleasant personality and a compelling drive to get things done in a hurry, he long ago was tabbed as one of the bright young men of the oil business.

Spahr joined Sohio in 1939. Prior to that he had been with Standard Oil Co. (Ind.), the Kansas State Highway Dept., and Phillips Petroleum Co., for brief periods. He was graduated from the University of Kansas in 1934 with a B.S. degree in civil engineering, and expanded his background with a year of study at the Harvard Graduate School of Business Administration.

Transportation became his forte, and during the war years, as a major in the engineers corps, he supervised construction of one of the two major pipelines in the India-Burma theater of operations.

Returning to Sohio, he directed various increasingly important phases of management in the company's expanding transportation department, and reached the vice-presidency in 1951. A scant four years later, the young-man-in-a-hurry was elected executive vice-president and assistant to the president, Clyde T. Foster. Eighteen years after he cast his lot with Sohio, he was elected president.

His enormous appetite for work, and his willingness to do his bit in many directions, is evidenced by the growing number of outside activities that occupy part of his attention. He is an API director and a former vice-president for transportation. He also is a director of Cleveland Electric Illuminating Co., the National City Bank of Cleveland, and of both the Cleveland and Ohio Chambers of Commerce. He serves on the boards of the Boy Scouts, the Red Cross, the Community Chest, and the Educational Research Council in Cleveland. In addition, he is a member of the advisory committees of the Midwest Stock Exchange and the Cleveland Engineering & Scientific Center.

That's not all, by a long shot. This busy young man also serves as a member of the Military Petroleum Advisory Board, and in 1952 found time to direct the Supply & Distribution Division of PAD. He is chairman of the 1960 Invest-in-America Committee in Cleveland, and area chairman for the U.S. Saving Bond campaign.

Active in his church, he also is a trustee of Lutheran Hospital, Cleveland Development Corp., Case Institute of Technology, and Baldwin-Wallace College, and a corporation member of Fenn College.

Ohio's DONNELL

James C. Donnell II is No. 3 in the succession of Donnells to run Ohio Oil Co., following in the footsteps of his father and his father's father. The first Donnell became president of the firm when it achieved its independence of the old Standard Oil trust as a result of the great decision of 1911.

Although this suggests a closely held family corporation, the opposite is true. It reflects the fact that three generations of stockholders have decided to stick with a team and a leadership that has brought the once-struggling young oil company a long, long way.

The current Donnell was only 38 when he was elected president just over a dozen years ago.

Jim spent his childhood learning the oil business. At 10, the family put him to work running messages in the Findlay office. At 14, he worked in the traffic department. At 16, he helped rebuild the Robinson refinery. At 22, he was graduated from Princeton University, in 1932, with a degree in geology and a Phi Betta Kappa key to mark his scholastic accomplishments.

His first full-time job with Ohio Oil was as manager of crude sales. Four years later, a serious-minded, reflective individual—characteristics which still mark him today—he was elected to the Ohio board, and in 1937 to a vice-presidency. When his father retired in 1948, he took the helm with the quiet confidence and leadership that had been instilled in his training program.

A hard-working executive, he often arrives at his Findlay office, a short walk from home, before eight in the morning. It isn't unusual to find him still there well after five, when the general offices are deserted except for a few late-workers like himself. He invariably lugs a brief case, and utilizes the time in automobiles and airplanes to go over company papers and problems. Business topics often crop up between shots during his golf games—and, for the record, his score card reads consistently in the mid-80s.

Donnell spends almost as much time on the road as he does in Findlay. And more and more, he is finding himself in industry forums as a champion of free enterprise and a fighter against legislative restrictions. An inveterate pipe-smoker, he thoughtfully puffs and ponders the many problems that face him day in and day out. He takes a reflective interest in everything, asks questions again and again until he has a thorough understanding of even the most complex problems.

One of his great outside interests is the YMCA, of which he is an international leader. And under his direction, his company expends much time, money, and effort toward advancing higher education, good business citizenship, and public affairs.

He is a director of several Ohio firms, a member of the API board, a former API vice-president for production, and a member of the National Petroleum Council, the National Industrial Conference Board, and various other organizations.

Kentucky Standard's SMITH

William C. Smith, president of Standard Oil Co. (Ky.), is another of the industry's chief executives whose

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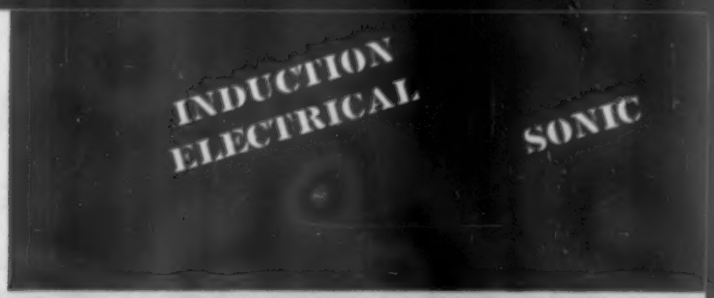

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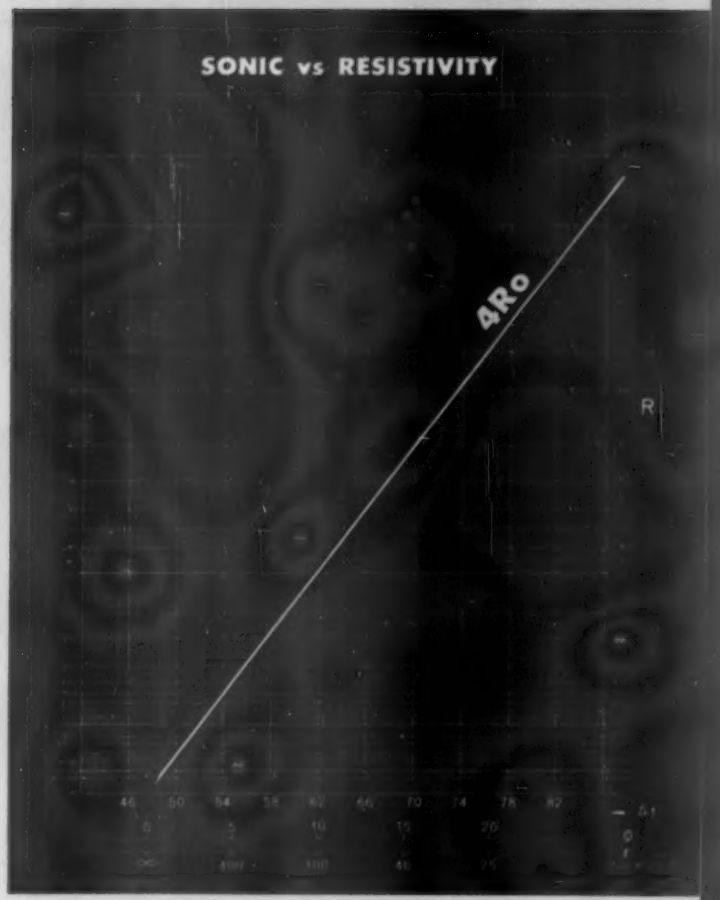

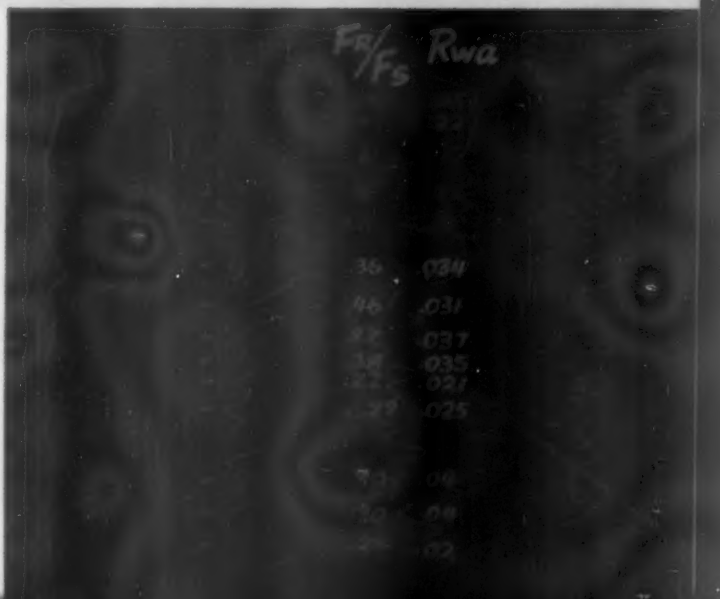

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DU PONT *Petroleum Chemicals* NEWS

Number 105 in a series of bulletins for the Petroleum Industry

NOVEMBER • DECEMBER 1960

NEW CINEMASCOPE MOVIE

gives America the BIG picture on travel

There you are – in your favorite theater . . . or your neighborhood "drive-in" – and suddenly you're driving across the Painted Desert, in the vibrant glow of early morning. Colors flash by. Music swells around you. Your spirit of adventure runs high.

The scene changes, and you're passing through a forest of giant sequoia trees. Then cruising down the beach at Daytona. And seconds later you're pulling into an historic 100-year-old village in New England.

The music rises, and a title sweeps across the wide Cinemascope screen: "Down the Road."

55 Million Viewers

For the next 9½ minutes, you will tour America. You and millions of other Americans – some 55 million of them.

You'll swing across the continent from Atlantic to Pacific, Alaska to Mexico. You'll look, watch, drive, fish, swim, photograph, poke and probe your way across this great and various land.

"Down the Road" is a color Cinemascope movie. Sponsored by Du Pont, it will be distributed on an international basis by 20th Century-Fox, starting with theaters all across America in December. This distribution will provide the oil industry with a *broad* "expand the demand" promotion. As such, it affords *your* company a natural backdrop to your own travel development activities.

Encourages Travel

In production for a full year and shot entirely on location – "Down the Road" will encourage a greater appreciation of the heritage and beauties of America, and stimulate public interest in seeing them firsthand through the convenience and comfort of the family car.

The movie is a fast-moving panorama that sweeps all the way from snow-capped peaks along the Alaskan Highway to sun-capped skyscrapers in Manhattan, from popular vacation

spots like the Grand Canyon to out-of-the-way lakeside camp sites, from the excitement of a Mardi Gras to the thrill of a county fair.

"America is a land as close to home as the point of view, and as far away as a thousand horizons." This narrative in the film points out that today's highways make *all* America our playland – to see, to admire, to cherish. But there's more than just scenery in this film. Woven into it are strong messages on safe driving, and for keeping the trip completely enjoyable with the help of America's network of service stations.

From start to finish, "Down the Road" is an entertainment motion picture, created to capture the imagination of theater audiences. Its single purpose is to appeal to the sense of adventure and pride we all share in America – and the ease with which our cars can bring it to life. It is expected to be one of the motion picture highlights of the coming year.

"Down the Road" will appeal to *all* motorists. Watch for it in *your* marketing area, starting in December.

Why Du Pont Sponsored "ROAD"

W. A. TAFT, Director of Sales of the Du Pont Petroleum Chemicals Division, explains the purpose behind Du Pont's sponsorship of the film "Down the Road."

"As partners in the oil industry, Du Pont has always sought unique, fresh approaches to the building and expansion of markets for petroleum products.

CONTINUED OTHER SIDE

ADVERTISEMENT—Prepared for the Petroleum Chemicals Division of E. I. du Pont de Nemours & Company (Inc.)

OVER

DU PONT *Petroleum Chemicals* NEWS

CONTINUED **Why Du Pont Sponsored "ROAD"**

W. A. TAFT, Director of Sales, Du Pont Petroleum Chemicals Division

"With the vast improvement in our highway system and in tourist accommodations, the time has arrived when motorists can readily and easily come to appreciate the many scenic values America has to offer. There is much to see. Adventure awaits us in all directions. All the average family needs is a little push, a little encouragement, to get them out of their own neighborhood and on the roads of America. This film is intended as a sampling of what awaits them beyond their own surroundings – to whet their appetites and give them that push.

"Naturally, a promotion of this type offers several advantages to the oil industry at large. When people take longer trips, they need more gasoline, oil, lubricants and allied products. They also get the travel habit, once the ice is broken. And finally, we're convinced that people who make planned automobile 'tours' are more inclined to take impromptu trips on week-ends and holidays. It all adds up to better business."

Du Pont TETRAMIX* combines the best of TEL and TML

Tests at our petroleum laboratory have shown that, in many cases, desired road octane levels can be achieved more economically with Du Pont's new lead antiknock, TETRAMIX, than with other lead compounds.

This new additive contains a combination of all possible methyl-ethyl lead compounds, including small amounts of TEL and TML. The result is a blending of the benefits of tetraethyl and tetramethyl lead into a single additive that offers you refining flexibility as well as lower lead costs for a given road octane level.

While the effectiveness of TETRAMIX varies with gasoline composition (as is true with TEL), it is effective in low, medium or high concentrations. It is also more effective in many gasolines on a cost-per-gallon basis than either TEL or TML.

Get in touch with your Du Pont Petroleum Chemicals representative. Because we offer all three compounds – TEL, TML and TETRAMIX – he can offer impartial advice in selecting the one additive best suited to your gasoline stocks.

*Trademark

PHILADELPHIA DISTRICT MANAGER

CARL W. FERRIS became manager of the Du Pont Petroleum Chemicals Division's Philadelphia District in July of 1959.

Mr. Ferris has exceptional experience and qualifications for helping refineries in his district, in the use of TEL, TML, Du Pont TETRAMIX antiknock compound and other additives.

He joined the Du Pont Company in 1947, and his first assignment was at the Du Pont Petroleum Laboratory, where he worked on fuel blending studies in the single cylinder engine laboratory. He then did road test work with the Du Pont fleet of fuel test cars. He was transferred to the Division's central region in 1951, where he served, successively, as regional automotive service representative, sales promotion coordinator, an account manager, and manager of the Chicago District.

Prior to his present position, he was on special technical and planning assignments in Wilmington.

A graduate of Cornell University, Mr. Ferris has a Bachelor of Mechanical Engineering degree. During World War II, he served nearly three years in the U. S. Navy and held a commission as Lieutenant, jg. He is a member of the Society of Automotive Engineers.

His main interests outside the office are gardening and woodworking. Carl is married and the father of two young girls.

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OVER

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A-17478

Printed in U.S.A.

road to success started in the oil fields. Smith's first job was as a roustabout in Arkansas when Smackover field came in back in 1927. Fresh out of the University of Kentucky, he spent four years in Arkansas, working his way up and absorbing knowledge of the production, refining, and marketing phases of the business.

He returned to Lexington, Ky., his home town, in 1931, and went to work as a city salesman for Kentucky Standard. One year later he became its agent there. Years of steady plugging paid off, and in 1950 he was promoted to the company's executive offices as a marketing assistant. He moved up to executive assistant in April, 1953. One month after that he was elected to the board. His new duties were those of assistant to the president—duties he performed so well that in 1957, at the age of 52, he succeeded W. G. Violette as president.

A peppery individual, Smith believes in the open door policy. He answers his own phone, and newsmen have a standing invitation to drop by at their own convenience. This contrasts sharply with the policies of his predecessors, who kept their contacts with newspaper people at a minimum.

Like most Kentuckians, Smith loves horses and horse racing, and was one of the organizers of the Keeneland Race Course, at Lexington. He's been a vice-president and director of the track since its beginning.

A busy, quick-moving executive, he keeps his desk clear, and rarely takes work home at night. He gets many business calls at home, however, and he's an office earlybird, usually arriving before 8:00 a.m. to handle calls from business associates in other communities where clocks are one hour ahead of Lexington's.

The president of Kentucky Standard is a member of the National Petroleum Council, and holds or has held directorships with the National Petroleum Assn., API, Southern Research Institute, and a Louisville bank.

Ashland's WELLS & BLAZER

Ashland Oil & Refining Co.'s top management not only believes in team spirit—it practices it day in and day out. In other words, the responsibilities and chores of chief executive officer are shared jointly by Chairman Rexford S. Blazer and President Everett F. Wells.

Both are graduates of the University of Illinois (Wells '26, and Blazer '28), and both started in sales. Wells, however, took a preliminary stab at laboratory work before switching to the sales department.

Blazer, following his graduation from college, hitch-hiked to Ashland, Ky., to seek a job with Ashland via his uncle, Paul G. Blazer, one of the company's founders. It was agreed, however, that a relative on the payroll might cause complications, so he took a job in Cleveland with Allied Oil Co., then a small fuel oil distributor. In fact, Blazer was the fifth employee—counting the two owners. In 1930 he became assistant sales manager, in 1935 sales manager, and three years later vice-president of marketing. By 1948 Allied had become the largest independent distributor of fuel oil in its marketing area, and Blazer was at its helm. About this time, Ashland absorbed Allied, and Blazer moved on up the ladder, first as a director of Ashland, then, in 1951, as its president. He held that post until 1957 when he became chairman.

Wells, after his training period, was Ashland's first regular salesman. Four years later he was named general sales manager, and a decade after that, vice-president. He achieved the executive vice-presidency in 1950, and the presidency in 1957, succeeding his longtime friend and colleague, Blazer.

Both are active in industry and civic affairs. Both are members of the National Petroleum Council, the Western Petroleum Refiners Assn., and the industry's 25-Year-Club. Blazer, however, is the more prominent of the twosome. He is a director of WPRA and API, and is serving his second term as president of National Petroleum Assn. He's also a bank director, and a director of the Asphalt Institute and the Kentucky Oil & Gas Assn., as well as a past president of the Kentucky Chamber of Commerce. Wells

continued ▸

Golden Rule Philosophies

"A corporation has a responsibility to conduct its business with every consideration for the ethics of the society of which it is a part. In the final analysis, profits are a vote of confidence in the job a company is doing for its customers."

A. L. Nickerson, president, Socony Mobil Oil Co.

"To keep this nation great and growing, and to meet the first real challenge to its industrial supremacy, calls for dynamic action. The task will require courage, labor, and willingness to take calculated risks. It will be done by men not cast in robot molds . . . men who will not fear to accept responsibility, to take the first step, to make an occasional mistake."

B. S. Watson, chairman, Cities Service Co.

"No one believes more sincerely than I that rising real wages are essential ingredients of continuing prosperity. But let's keep them real by having the wisdom to understand, and the courage to stand fast, for the kind of wage trend that will help us remain a dynamic industry as more people everywhere are able to buy our products."

Henderson Supplee, Jr., president, Atlantic Refining Co.

is a member of the Kentucky Water Resources Study Commission for the Dept. of Conservation, and a director of the Second National Bank.

Richfield's JONES

Charles S. Jones, president of Richfield Oil Corp. and predecessor companies for 33 years, is the enigma of the industry's top executives. He is so averse to personal publicity that only his closest friends know more than the barest facts about him and his long-time career in oil.

He is a director and past president of the Western Oil & Gas Assn., a director of API, and a former vice-president of its transportation division. He is a member of the National Petroleum Council, too. He participates in all of these industry activities, but usually manages to fade discreetly into the background.

Jones, in his own words, has a minimum of interests outside the oil industry. Among these are directorships with Douglas Aircraft Co. and Pacific Mutual Life Insurance Co. He also serves as a trustee of the California Institute of Technology, and of the California Arboretum.

He believes strongly in conservation of natural resources, and has taken an active role in movements to beautify Los Angeles. He is one of the founders, and the first president of the Men's Garden Club of Los Angeles.

Skelly's MILLER

Skelly Oil Co.'s president, Don H. Miller, is a man who knows petroleum marketing inside and out. He can look back on a 30-year career that had its beginnings in service station driveways in his home-town, Kansas City, in 1929. Miller oiled, greased, and serviced cars to supplement his income while majoring in business administration at the University of Missouri.

After graduation, Skelly gave him a full-time job. He absorbed everything he could in the accounting, retail credit, and wholesale credit departments, and was rewarded with a promotion to the Kansas City wholesale division office as an assistant to the division manager.

Then came a roadwork training program. In 1937 he went into the field as a Grease-Master Merchandiser, traveling throughout Skelly's 17-state marketing area. The year 1939 saw him as a wholesale salesman in Madison, Wis., and Springfield, Ill., and an assistant division manager in Omaha, Neb. By 1945 he was back in Kansas City, this time as a special marketing representative.

His rise through the ranks was steady thereafter. He was named manager of wholesale sales in 1953, and assistant to the vice-president of marketing three years later. In two years he added an additional title and responsibilities—general manager of marketing. A directorship came next, then the big job itself, the presidency. Little is known publicly about his personal life or hobbies. But he is active in business and civic affairs, including directorships with Mission Corp., Great Lakes Pipe Line Co., the First National Bank & Trust Co. of Tulsa., and API. He also is a member of the board of trustees of the University of Tulsa.

Signal's MOSHER

Two farm boys with $4,000 in borrowed money and a government leaflet on "How to Build a Gasoline Plant" founded what is now Signal Oil & Gas Co. almost four decades ago. One has long since faded out of the picture. The other is Samuel B. Mosher, a chunky, easy-going man of 68, whose ingenuity, persistence, and willingness to gamble big nurtured Signal into what it is today—one of the biggest independents on the West Coast.

Mosher, now chairman, has been the controlling factor in Signal's management since the earliest days. He and his buddy turned from ranching to oil not long after the Signal Hill discovery. Their Bureau of Mines leaflet told them how to build and operate a casinghead gasoline plant, and they plunged into it—even though one big refiner told them that he

continued ▶

if your business
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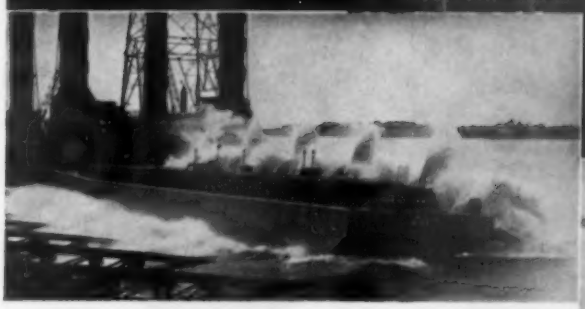

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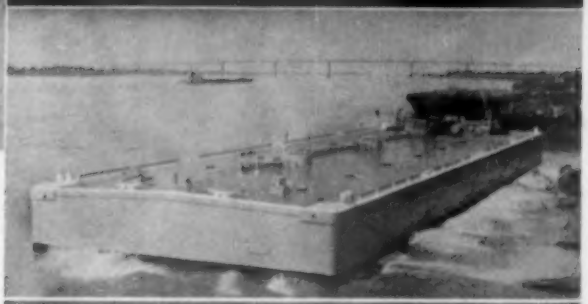

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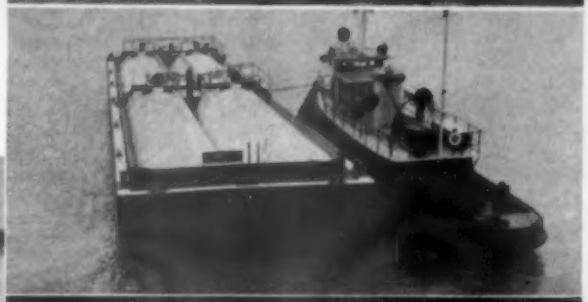

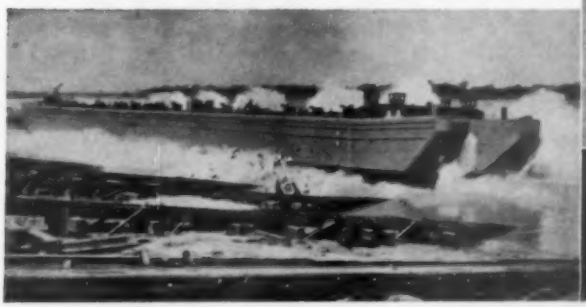

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"could knock more gasoline out of the gas with a stick than you'll ever get from your plant." Unabashed, they talked their way into contracts, and a successful business venture.

In the late 1920s, Mosher went into drilling, and initiated a "whipstocking" technique to get around complaints of the public about pollution of offshore waters. Disaster stared him in the face in the winter of 1930 when his natural gasoline market vanished almost overnight.

Reacting with speed and courage, Mosher picked up a small refinery and a couple of service stations and blossomed out as a manufacturer and retailer of gasoline.

He made a tie-in deal with Standard of California, eventually sold his marketing setup to this firm, and in 1947 started a new one that is now as big as the one he parted with. Shrewd, but always willing to gamble for the right stakes, he took a charter interest in American Independent Oil Co., which holds an undivided half-interest in the Neutral Zone and a small piece of the Iranian Consortium. He also helped set up a syndicate that bought American President Lines, Inc., a Pacific steamship line that is doing right nicely.

Even his hobby is paying huge dividends. A flower-lover, he raised oodles of carnations, then hit on the idea of cultivating rare orchids. It wasn't too long before his orchids and orchid exchange became big money-makers, and Mosher, at one point, said the return was better than he could get out of his oil investments.

His 4,500-acre ranch north of Santa Barbara is an offshoot of his oil prospecting. He had picked up a strip of shore front to use for whipstocking wells, and he decided that the one segment that sloped so handsomely might be converted into ranch land with proper irrigation. That he did, and this project developed into a showplace home and farm, with cattle, lemon and avocado trees, and flowers galore.

Mosher was graduated from the University of California with an agricultural background. He's come a long way since then. He gets a kick out of working hard, and out of tinkering with his nonpetroleum investments. Years ago, a national magazine made this comment about him: "You never met a more relaxed tycoon than the man who runs and mostly owns the biggest independent oil company on the West Coast. He's unawed by his job, unimpressed by his wealth. He loves food, flower raising, and fun."

Amerada's JACOBSEN

Danish-born Alfred Jacobsen stands tall, literally and figuratively, in industry and government circles. At 70, his ascetic qualties, tough-minded monosyllabic comments, and explosive energy have made him one of the most respected—and paradoxical—executives in the oil business.

As chairman of Amerada Petroleum Corp., he has masterminded many multimillion-dollar oil gambles, including the first successful penetration of the Williston Basin. Yet he has been known to quibble about wasted postage stamps.

Unpretentious, despite substantial personal wealth, he has no time for fuss, feathers, or official folderol. Phone callers frequently are flabbergasted by the ease with which he can be reached, with no secretarial "who's calling please?" delays. His office is tight-knit. There are no employee relations, public relations, or advertising departments. In fact, the New York office consists of fewer than a dozen rooms and a handful of aides.

Work is his consuming interest. As a rule, he can be found in his office on Saturdays and Sundays because "I can get more work done when I am alone." He has no social life, shuns the theater, movies, and TV, and spurns personal publicity. He is a wide reader, however, and speaks five languages—Danish, English, Spanish, German, and French.

A farmer's son, Jacobsen left Copenhagen at 18, and spent ten years in Mexico. The British-owned Mexican Eagle Oil Co. hired him because of his extensive knowledge of the country's laws. He joined Amerada as a vice-president in 1926, became its president in 1929 when Everette De Golyer moved up to the chairmanship.

Jacobsen's ideas about business operations are hard-bitten and unconventional. He has few fixed policies, because they're "merely a damn convenient excuse for avoiding a difficult decision." He defines the role of a chief executive as that of the exercise of judgment, "the one thing you can't learn at college." In his own words, he doesn't meddle in the work of his geologists, geophysicists, and physicists. "I hire men who are specialists in these fields, and it's silly to mess with them," he says.

Years ago, a national magazine described Jacobsen as one of the world's biggest winners in the great gamble of oil. His rule for success was stated squarely: "If you don't want to take risks, you can't make money. If you haven't the courage to lose, stay out of oil."

Jacobsen has been a member of the API board since 1923, and for years has chaired API's Committee on National Oil Policy. He is a member of the National Petroleum Council too. In 1952 the King of Denmark conferred the Knight Cross of the Order of Dannebrog upon him.

Reprints Available

Reprints of this report are being prepared and will be available in December. Single copies will be sent to Petroleum Week subscribers on request without charge. Additional copies will be billed at the following rates: 1-10 copies, 50¢ each; 11-100, 40¢ each; 101-1,000, 30¢ each; over 1,000, 20¢ each. Address orders to:

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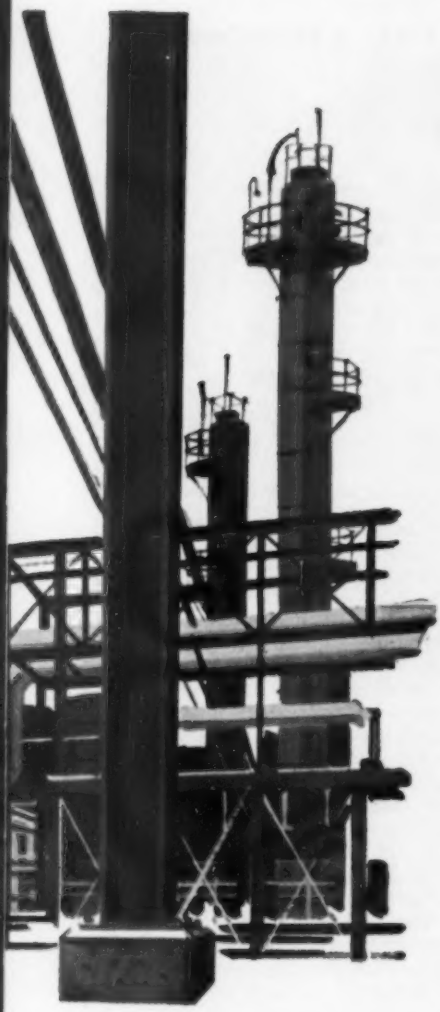

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When Foster Wheeler designs, engineers and constructs your process plant, *experience* is the foundation for process profitability.

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Better, Cheaper Analyzers Needed

One of the most urgent needs of the refining and petrochemical industry today is for instruments that can perform speedier, more accurate analytical research in the hands of less specialized personnel.

Analyses are being performed constantly in refineries and processing plants, to check the composition of products, detect impurities, or break down new products. The aim of those in charge of analytical research is to find ways of doing it faster, cheaper, if possible automatically, and with less specialized personnel.

"About 10% of the personnel used in our analytical research division," C. E. Starr, of Esso Research & Engineering Co., told PETROLEUM WEEK, "is engaged in developing new tools to advance the field of analytical chemistry.

"One important point frequently overlooked is that we endeavor to apply automatic control to our laboratory equipment as well as to our processing units in the refineries."

Esso Research currently utilizes over $1-million worth of major analysis equipment.

Analytical research used to be performed by elaborate separation methods, followed by physical or chemical identification. Much of this is done today in a one-step operation with the help of modern instruments.

A great deal of the conventional work is still being done in laboratories. But the tendency is toward replacing the tedious separation and analysis work by instruments such as:

- Gas chromatographs;
- Mass spectrometers;
- Infrared, ultraviolet, and X-ray spectrophotometers;
- Nuclear Magnetic Resonance spectrometers (PW—Jun.10'60,p32);
- Refractometers;
- Scintillation apparatus for isotopic measurements (PW—Oct.9'59, p76);
- Specific detectors and analyzers, and many other apparatus.

The rapid progress made by the gas chromatograph, for both laboratory and on-stream analysis, is due to the fact that it is the only analyzer that performs automatically the separation of components of a mixture. (PW—May8'59,p40;Sep.9'60,p42).

This is accomplished in one, or several, separation columns.

The trick, therefore, is to find materials with which to fill the columns, which will perform the best separation of each of the components.

These components are then released one after the other into a detector. Here, their identification is made by measuring the difference between the thermoconductivity of each component and that of a "carrier gas." This difference provides the voltage for the recording apparatus.

Principal advantages of the chromatograph: simplicity, fast operation, ease of data interpretation, and low cost. Cost of chromatographs used in refineries today vary from less than $4,000 to $10,000, depending on the number of streams and components that can be separated and analyzed.

Mass spectrometers are the bulkiest, most elaborate, and most costly of the analyzers.

A mass spectrometer is basically a device for sorting atoms and molecules according to their mass. It gives immediately the molecular weight of a substance, and a certain amount of information about its basic structure.

Each particle of the sample is given an electric charge; that is, it is ionized. Then, as the charged particles move away from the sample, electric and magnetic forces are focused upon them. Under the influence of the electric and magnetic fields, particles of the same mass follow the same paths, as they are being deflected, while particles of different masses follow different paths. These differences in the deflection are recorded, and from the records identification is made.

"Some 15 years ago," Starr says, "it would have taken 20 to 25 people to make from 25 to 30 analyses a day in the range of C_1 to C_5 hydrocarbons. Today the work is done with three people, it is more accurate, and it gives us a great deal more information."

As interest in hydrocarbons of higher molecular weight grew, so did the complexity of mass spectrometers —and their cost.

Above the C_9 group, the individual hydrocarbons are much more difficult to isolate, because of the enormous number of isomers of each.

"Our most sophisticated and most expensive analytical instrument," says Bill Priestley, director of Esso's analytical research division, "is a mass spectrometer from Consolidated Electrodynamics Corp. which is being installed now. It costs $100,000, and makes it possible to analyze hydrocarbons of very high molecular weights and high boiling points."

On the other hand, spectrophotom-

TADS Monitors Chromatography

Total Analysis Digital System (TADS) is a new method for the processing of data obtained from chromatographic analyses, with many potential applications in refineries and petrochemical plants.

TADS was developed recently by Phillips Petroleum Co. Perkin-Elmer Corp., has been licensed to handle it commercially.

The system makes it possible to program:

- The sequence of operation of several chromatographs;
- The correction of thermoconductivity readings, upon which chromatographic analysis is based;
- The transmittal of the results, in any desired sequence.

TADS will be used initially for control-laboratory studies; but it will soon spread into processing plants, Perkin-Elmer predicts.

It can handle as many as 20 stream-components from the various chromatographs in a laboratory. Its use is obvious for such applications as:

- Pilot plants, or starting units, where as much data as possible is desired, to study and adjust the new type of operation.
- Integrated process plant control, because TADS will transmit impulses, properly decoded, to any number of receiving points.
- Automatic computer control. Instead of a typewriter, the impulses can be fed into an electronic computer, and the process optimized or completely controlled, as a result of computer calculations.

IF TIRES COULD TALK THEY WOULD TELL YOU:

"Very close to 50 percent of the butadiene required for synthetic rubber in the U.S. can be produced by plants using the versatile one-step Houdry Dehydrogenation Process.

"And most of this capacity has gone on stream since 1957, based on a background of serving U.S. industry for over 15 years. It is also producing butadiene in Europe, and two additional units will go on stream in Europe and Asia this year."

By direct dehydrogenation of butane, the Houdry Dehydrogenation Process can produce butene as well as butadiene, and produces other mono- and diolefins from the corresponding saturated hydrocarbons. This flexibility allows processors to switch their output to meet changing market conditions, and the changing demands of the chemical industry. Adapting the process to yield a changed end product is simple and economical.

A description of the Houdry Dehydrogenation Process and the economics of its operation will be sent promptly, on request. When you write, you'll find it well worth your while to ask for an up-to-date outline of Houdry services, too.

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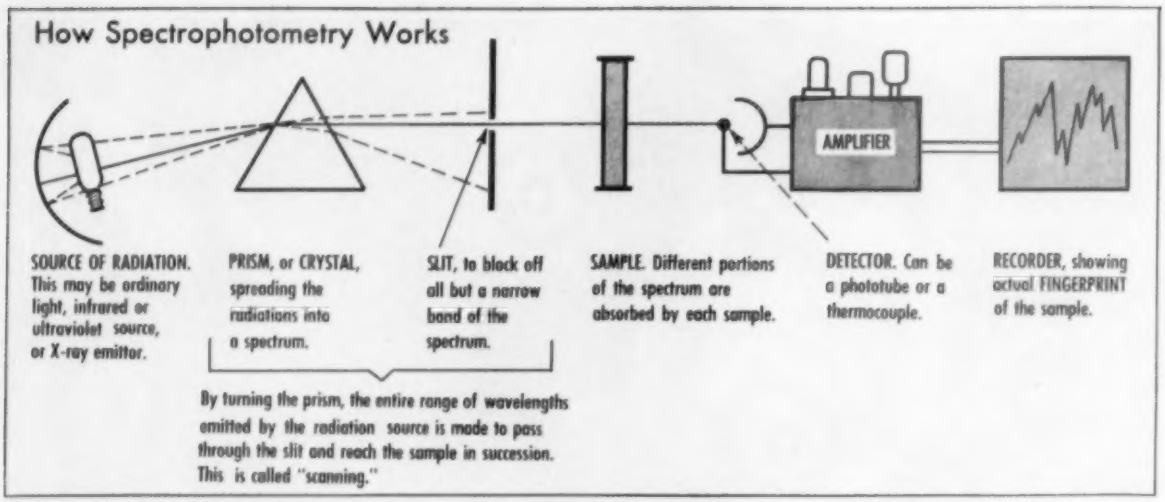
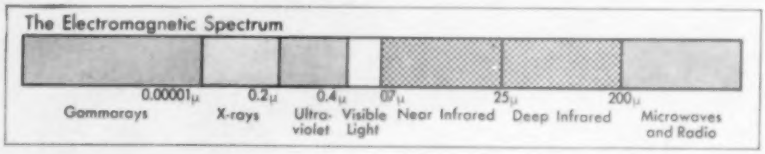

How Spectrophotometry Works
AMPLIFIER
SOURCE OF RADIATION. This may be ordinary light, infrared or ultraviolet source, or X-ray emittor.
PRISM, or CRYSTAL, spreading the radiations into a spectrum.
SLIT, to block off all but a narrow band of the spectrum.
SAMPLE. Different portions of the spectrum are absorbed by each sample.
DETECTOR. Can be a phototube or a thermocouple.
RECORDER, showing actual FINGERPRINT of the sample.
By turning the prism, the entire range of wavelengths emitted by the radiation source is made to pass through the slit and reach the sample in succession. This is called "scanning."

eters are becoming more streamlined, and contain more versatile features for better precision.

Spectrophotometers are optical instruments that make use of the property of every substance to absorb electromagnetic radiations very selectively.

When a molecule, in any substance, is exposed to a radiation of the same frequency as its own, it absorbs that radiation energy. But when it is exposed to a radiation of another frequency—another wave length—it simply lets it pass through. This is the basis of spectrophotometry (diagram, above).

As certain components react more clearly than others to one type or another of wavelengths, spectrophotometers for different wavelengths are being built.



Infrared spectrophotometry is a very useful method of analysis: It can team up with chromatography, and analyze more precisely components that have been separated by the chromatograph.

Each element, each compound, possesses its own specific absorption spectrum when exposed to a succession of infrared radiations. Such a spectrum is used as a "fingerprint" of the substance. By comparing it to existing records of spectra, the substance can be identified.

Infrared spectrophotometers—such as Perkin Elmer's Infracord—cost as little as $4,500.

These apparatus are suitable for about 70% of all analytical problems soluble by infrared methods, P.E. says. For more sophisticated analyses, spectrophotometers are available with interchangeable components; they permit scanning over a wider range of wavelengths, and they are built so as to eliminate errors due to outside vibrations, dust, or moisture. These instruments are in the $15,000 range.

Certain analytical problems require a different range of radiations, including ultraviolet and visible light. Ultraviolet spectrophotometers provide such a range.

Ultraviolet is not as specific as infrared, but it is more sensitive. It can also be used with aqueous solutions, whereas water interferes greatly in the infrared range.

Ultraviolet is used particularly for the study of aromatic and olefinic hydrocarbons, while paraffins and naphthenes can be studied better in the infrared.

Ultraviolet generally determines groups of elements, while infrared detects bonding between elements.

Great progress is being made at present in the use of X-ray spectrophotometry.

General Electric Co. is applying its X-Ray Emission Gauge (XEG) to both laboratory and on-stream analysis. It is a spectrophotometer that uses, as its source of radiations, an X-ray emittor. This method does not work for gases, but is used extensively to analyze specific elements in liquid hydrocarbons, for example lead in gasoline, vanadium in crude, or sulfur in polymers. It can be applied only, says G.E., to elements having an atomic weight above 12, and the efficiency of the method increases as the atomic weight of the substance analyzed increases.

Refractometry is widely used in laboratory work, particularly for such applications as monitoring the fractions from distillation columns.

Nearly all laboratories in the oil and petrochemical industry have refractometers, and some have been used for on-line analysis. They are based upon the property of every substance to modify, to a different extent, the angle of a beam of light that passes through it.

The cost of laboratory refractometers is small, but process differential refractometers cost $3,000 to $5,000.

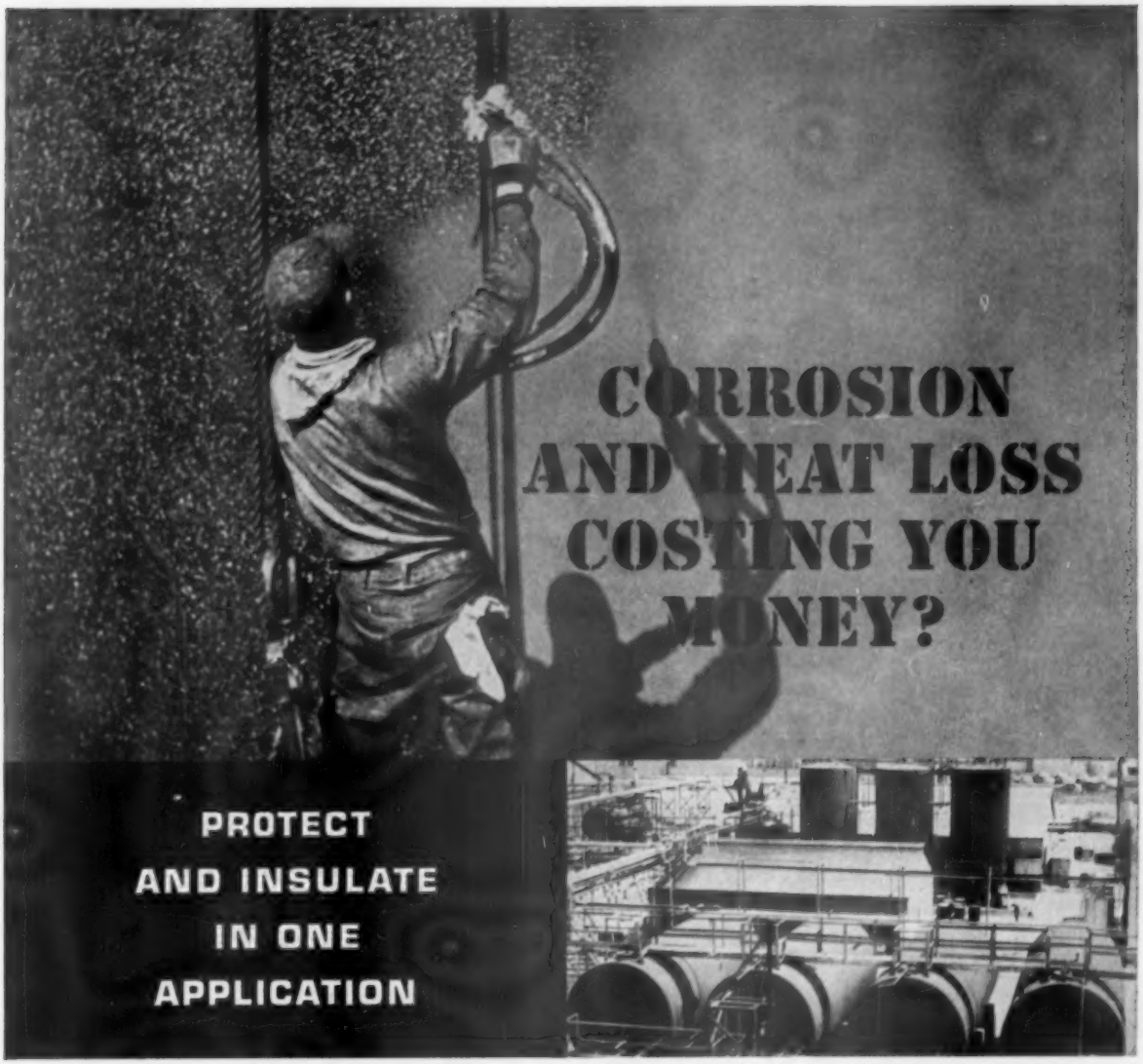
Twin Chromatographs Monitor Chemical Unit

Latest development in process chromatography is illustrated by twin units to which Perkin Elmer Corp. is putting final touches, one for the U.S. and one for abroad.

These units will guard against the presence of moisture in a polymerization batch. This monitoring job is so essential to the process, P.E. says, that each component of the control has a duplicate.

The duplicate unit is cut in automatically if anything goes wrong to the chromatographic control on stream.

The twin units are enclosed in one cabinet.



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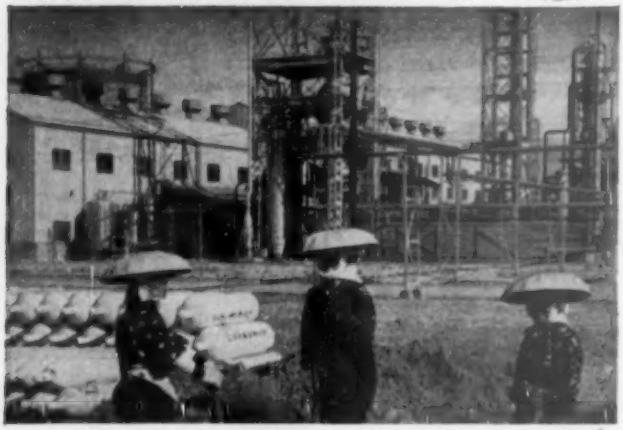

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- 8 NEW PLANTS IN THE U.S.A.
- 1,113,000 TONS PER YEAR

Since the first months of 1957, 13 new Chemico ammonia plants have been completed and put into operation. Another 7 Chemico plants are under construction or in the engineering stages. The design capacity of these 20 plants totals more than 1,000,000 tons per year.

Chemico's versatility in ammonia plant design is evidenced by the variety of raw materials on which these plants are based. While natural gas was the most common, crude oil, fuel oil and coke oven gas were also used. Regardless of feed stock, however, all thirteen of the operating plants were completed on schedule and started up without significant difficulties or delays. One plant, designed to produce 150 tons per day, took less than ten months to build, from initial go-ahead to completion of a satisfactory test-run.

This outstanding record in the ammonia field is just one of the reasons why chemical and petroleum companies all over the world continue to call on Chemico when they require ENGINEERING AT ITS BEST.

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"DETONATIONS CAN OCCUR in any refinery, natural gasoline plant, or petrochemical plant," says Indiana Standard's J. C. Ducommun, "if proper precautions are not taken. It's imperative, therefore, to take those precautions." He feels . . .

Safety Programs Are Management's Job

Much emphasis has been put on safety recently in refineries and petrochemical plants. Yet much improvement can still be accomplished, and much work still needs to be done.

The entire session of the Division of Refining of the American Petroleum Institute, during its annual meeting in Chicago this week, was devoted to safety matters.

"An outstanding job in this important endeavor has been done by the petroleum companies over the years," James H. Herbert, a safety consultant who recently retired as safety director of Socony Mobil Oil Co., told PETROLEUM WEEK. "But a barrier seems to be in the way of further improvement. This barrier can be broken. I believe that a rejuvenation of the concept of safety in the petroleum industry is required.

"The curves representative of yearly accidents in the petroleum industry," Herbert pointed out, "after showing a gratifying decrease, now seem to be leveling off. That condition should be corrected."

Most refiners today are devoting considerable time and money to the development of better, more comprehensive safety programs.

A sound accident and fire protection program in refineries, according to Herbert, should result in a substantial increase in the value of each share of stock.

But, to be effective, the program must possess certain inherent characteristics.

There are two factors essential to the success of a safety program in a refinery. The first is the degree of interest shown by the top management in this program.

"I believe so strongly in the value to a company of top management participation in the safety program," Herbert told PETROLEUM WEEK, "that I feel confident that any oil company that is not already doing so could improve its safety record anywhere from 10% to 20% during the first year, if the chairman of the board would review the company's current safety record at regular board meetings."

The interest in safety on the part of management will telegraph itself all the way through the organization: Plant supervisors would be interested in safety to a greater degree if their plant manager would talk with them about it regularly; plant managers, in like fashion, would improve the safety record in their area of authority if their department heads would regularly discuss safety with them.

To emphasize the importance to its management of safety, Cities Service Co. inaugurated last year a safety contest among all its subsidiary companies.

The cup—the W. Alton Jones safety award—was won for the first year by the Lake Charles refinery.

The second essential factor is the technical level of those in charge of safety activities.

There is little, if anything, in common between the safety program and personnel relations, Herbert says, and it is basically wrong to place the safety men under the supervision of the employee relations manager, as is frequently done.

Those having the responsibility of prescribing safety rules should be technicians, thoroughly familiar with the design and the operation of the processing units.

Typical of such safety programs is that of Standard Oil Co. (Ind.), which was described at this week's API meeting.

J. C. Ducommun, general manager of manufacturing and a director of Indiana Standard, indicated that the program starts with top management. It includes a tightening of former procedures, and a spelling out of what was implicit in the existing safety program, but which the personnel had become lax in observing.

To implement the program, a new position, manager of unit operations, was created. His responsibilities are "to develop, administer, and implement manufacturing department policies for safe and efficient operation of all refinery units, and to approve safe operating procedures for all these units."

As further part of the program, three new working committees were established, each reporting to the manager of unit operations:

(1) A process review committee, which studies operating procedures for each unit.

(2) A hazard review committee, which studies hazardous refinery conditions wherever found, and proposes corrective measures.

(3) A process facilities review committee, which reviews the design of major projects, to assure that full consideration is given to safety, oper-

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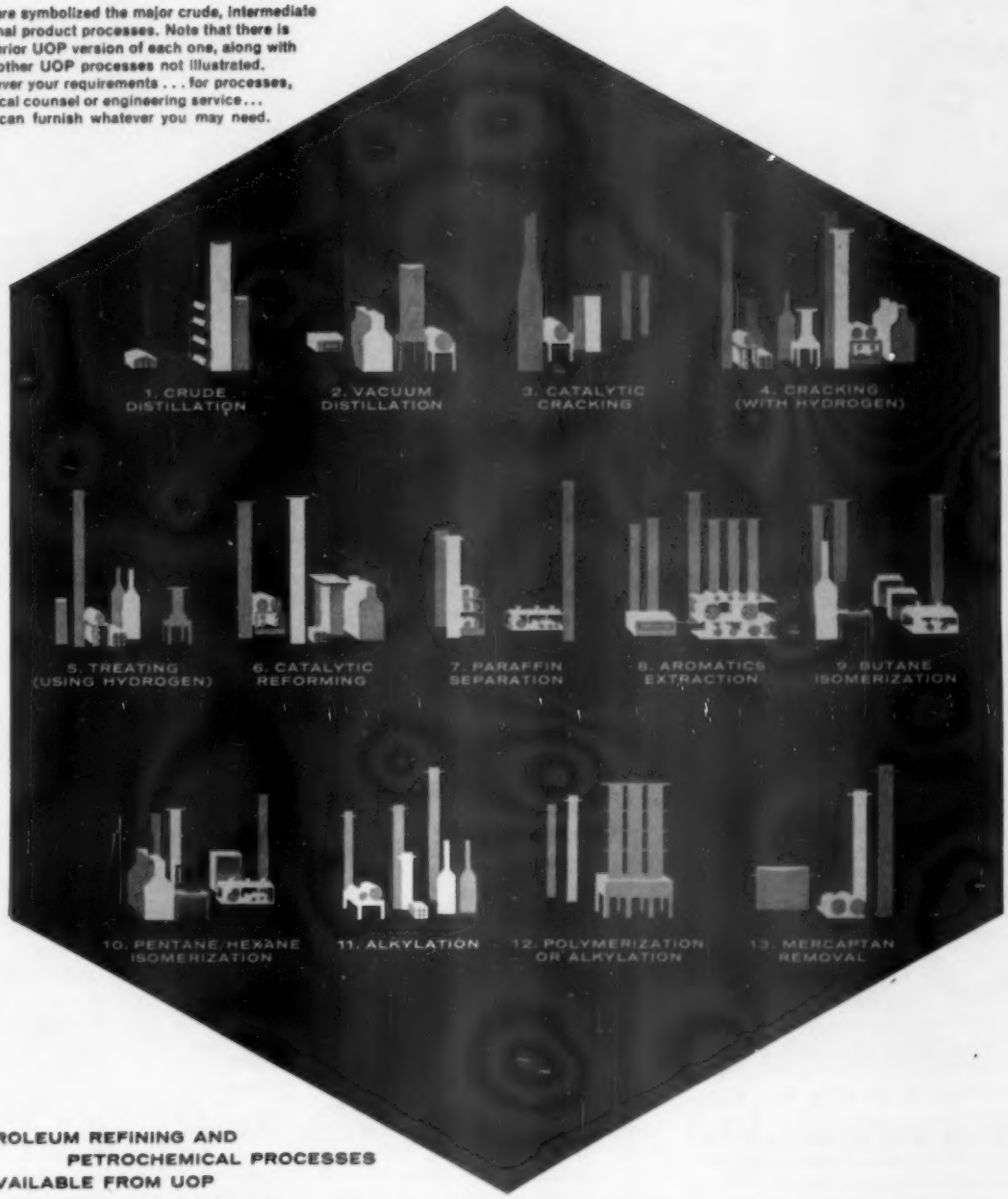
"HF" ALKYLATION

Here is a catalytic process that enables the refiner to produce an isoparaffin fuel component that burns with a minimum of carbon deposit . . . greatly reduces surface ignition and consequent rumble . . . is ideally suited to today's high compression auto engine.

Developed and licensed by UOP, "HF" Alkylation combines olefins such as propylenes, butylenes and amylenes with isoparaffin, usually isobutane. The component thus formed, alkylate, is a mixture of branch chain hydrocarbons of higher molecular weight. It is widely used in producing high octane aviation gasoline, as well as an anti-rumble component in motor fuel.

An ideal companion process to "HF" Alkylation is the UOP Butamer™ process for producing isobutane.

Here are symbolized the major crude, intermediate and final product processes. Note that there is a superior UOP version of each one, along with eight other UOP processes not illustrated. Whatever your requirements . . . for processes, technical counsel or engineering service... UOP can furnish whatever you may need.



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UNISOL®—an economical process for treating high mercaptan-containing gasolines.

ability, and ease of maintenance and startup.

The safety program also calls for frequent meetings attended by both supervisory and nonsupervisory personnel.

At these meetings, safety booklets prepared by the company are distributed.

Nearly 100 oil companies, in the U.S. and abroad, are using copies of these booklets, Ducommun said.

In August of this year, the first version of a loose-leaf Process Safety Manual was distributed to manufacturing departments and other technical supervisors of all affiliated refineries of Indiana Standard.

Over the past five years, there have been at least twelve major detonations in U.S. refineries and petrochemical plants involving the mixture of air and oxygen with hydrocarbons, in a variety of pressure systems.

"Hydrocarbons must not be mixed with air in pressure vessels or lines, except under rigorously controlled conditions," Ducommun pointed out.

He described some of these accidents in his talk to API. But he pointed out that the talk was simply an introduction to the main feature of the session: "Danger, Air!," a color film prepared by the Ethyl Corp. with the cooperation of the whole refining industry, under the joint sponsorship of the API committees on Insurance, Safety, Fire Protection, and Operating Practice.

The hazard of air being present at the wrong place at the wrong time is particularly dangerous during start-up and shutdown operations (PW—Nov.13'59,p87).

"Nature," Ducommun said, "always stands ready to provide the ignition one way or another, and the end product can all too easily be a detonation.

"We found that the sources of possible ignition within a refinery are, for all practical purposes, almost infinite—so many that we've even given up trying to name them all."

The detonation that may result can make a mere explosion seem a flash in the pan by comparison.

Normal explosion waves travel rather slowly, at most a few hundred feet per second. Detonation waves, on the other hand, move at supersonic speeds—from 2,000 ft. to 8,000 ft. a second—in air and hydrocarbon mixtures.

And while ordinary explosions may produce pressures as much as 6 to 10 times the initial pressure in a given vessel, a detonation will produce immediate pressures as high as 60 to 100 times the initial pressure, and impact and reflection may multiply this pressure by a factor of 32 or more, Ducommun explained.

Detonations, however, are not the only source of accidents in refineries.

"Accidents," Herbert told PETROLEUM WEEK, "are not really 'unexpected happenings.' They are generally caused by someone doing something he shouldn't have done."

He illustrated his point by citing some frequent causes of accidents in refineries:

- Performing repair work on 'operating' equipment;
- Entering vessels the wrong way;
- Welding, or using an open fire, in a questionable area;
- Exposing oneself to toxic or radioactive substances;
- Blinding, or plugging, a line during some maintenance operation—and neglecting to check afterwards;
- Starting a furnace fire in a nonapproved manner.

Recent detonations have brought out the fact that the financial risk of an accident in a refinery is substantially higher than insurance companies had been figuring, C. Henry Austin, Indiana Standard's insurance expert, told the API meeting.

Until 1955, Austin said, the oil refinery industry had never experienced a single loss that exceeded $5-million. Beginning in 1955, however, there was tragically conclusive evidence that radical revisions of earlier estimates were called for, and insurance companies have increased their estimates by as much as 400%.

"The attitude throughout the refining industry has evolved," Austin said. "We realize that the best way to protect ourselves financially is by seeing to it, as far as humanly possible, that there are no accidents against which to indemnify."

Actually, the cost of accidents usually goes far beyond the amount recovered from the insurance.

The old adage: "The insurance company will pay for it" is costing oil companies millions of dollars every year, Herbert says, because many expenses are often overlooked that must, directly or indirectly, be attributed to an accident.

What's New / IN PROCESSING

What is said to be the largest hydraulic cleaning unit in the industry—capable of producing simultaneously six streams of water at 10,000 psi.—has been delivered to Tidewater Oil Co.'s Delaware refinery.

Tidewater says the unit has about double the pressure capacity of similar units used at other refineries.

It will be used to clean dirt, coke, and scale from the interior walls of metal vessels and piping, principally heat exchanger tubes. Towing by truck or tractor will make the unit mobile.

Worthington Corp., Oil City, Pa., is the manufacturer; cost was about $65,000.

•

An Esso steam cracker being built in Sweden will be responsible for the country's first petrochemicals venture: It will supply raw materials to two new plants, one for polyethylene production, and the other for ethylene oxide. The cracker, now being built at Stenungsund, will be on stream by spring or summer of 1963. Its output is expected to be about 75,000 tons per year of ethylene. Propylene and butadiene will also be principle products, although Esso's immediate interest is in ethylene. Raw materials for the cracker will come from nearby refineries in the Esso group.

Sweden's first polyethylene plant will be operated by a new company, jointly owned by Union Carbide Corp. and a Swedish company, Fosfatbolaget. Its annual capacity will be about 15,000 tons.

Mo och Domsjo, also a Swedish company, will produce ethylene oxide at a plant it is building with an initial capacity of 10,000 tons a year. The plant will process the oxide into ethylene glycol.

•

Esso Research & Engineering Co. has installed a gas turbine at its Linden (N.J.) lab to be used to develop fuels and lubricants for automotive gas turbines when they become available commercially.

The 625-lb., 225-shaft-hp. engine will first be used by the products research section to determine the fuel and lubricant requirements of an automotive turbine.

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DEPENDING UPON DESIGN OBJECTIVES THE COMBIN-AIRE MAY HAVE SOME OR ALL OF THE FOLLOWING ADVANTAGES:

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- No water treatment necessary. Salt water or brackish water may be used.
- No spray carryover or condensation. After passing across the fin-tube elements the heated air leaving the Combin-aire at elevated temperature is undersaturated with water vapor and cannot precipitate condensate or carry water spray.
- Minimum piping. Combin-aire may be installed immediately adjacent to other process equipment.
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Germany Mirrors Oil Industry's Plight

Though demand is rocketing upward, competition is stiff, and product prices, and profits, are down.

BONN—Take a look in the West German mirror and you'll see the whole oil world's problems—plenty of oil and a relentless scramble for markets.

But while the oil companies are locked in battle, the average German consumer is happy over the situation—he is benefitting from lower prices for many oil products.

In Germany, however, the problems are made, if anything, more intense by a booming market.

Demand has leaped from just 4-million tons in 1950 to 24-million tons last year. Demand is expected to increase 27% to 29-million tons in 1960 and, by the end of 1965, the figure should rise to 38-million or even 40-million tons.

One reason for the optimism on the continued growth of the German market is that German per capita consumption is still low compared with the United States and the United Kingdom.

In addition, the rapid growth of petrochemical manufacture, the automobile boom here, and the apparent trend away from coal to fuel oil also portend a continued rise in demand.

I. Big Firms vs. Small Firms

There are two main forces in the German marketing picture: on one hand the large, long-established firms and, on the other, small independents and newcomers.

The large firms include such international majors as Shell, Esso, Mobil, and British Petroleum, as well as German independent companies such as BV Aral.

The smaller independents are operators of the so-called "white" service stations, which sell gasoline at lower prices than the big firms; and coal mine operators, which have a substantial share of the fuel oil market.

Among the newcomers are some American companies, including Continental Oil, which bought a "white" station system recently.

The present state of the German market is putting the big established firms in a paradoxical position.

Although they hold the bulk of the market—approximately 80%—and despite big sales increases year after year, they have suffered severe operational losses.

The big operators here are being forced to make short-term sacrifices, such as cutting prices to meet competition from small independents, in an attempt to roll up long-term gains.

For it is believed here that, once the growth of German oil consumption levels off (a time still apparently far distant), the present price-cutting will come to an end, and each oil company will more or less keep the share of the market it has acquired at that time.

II. There Are Paradoxes

Paradoxically, the major firms, although unable to sell all their refinery output now, are expanding refining capacity.

The present German capacity is 40-million tons per year, which, because of necessary idling time, means that the plants can handle about 34-million tons. This is only slightly in excess of requirements.

Among the refineries planned or in the talking stage are the following:

A 40,000 b/d plant at Karlsruhe, in South Germany, to be built by Deutsche Erdoel, Mobil, Gelsenberg, Wintershall, and Scholven Chemie.

A 65,000 b/d unit at Karlsruhe, planned by Esso.

In addition, both Esso and Shell have announced definite plans to build a refinery each in Bavaria, to be fed by a 22-in. pipeline spur from the projected Marseilles-Karlsruhe line.

Finally, ENI's German subsidiary, Suedpetrol, says it's planning a 120,000 b/d refinery at Ingolstadt, and a 40,000-80,000 b/d plant in Wuerttemberg.

It is believed here, however, that ENI has lowered its sights in the Ingolstadt project and may reduce capacity to 30,000 or 40,000 b/d. Some Germany sources have even predicted that the ENI plans may be dropped entirely, since the Italian firm has no extensive sales organization in Germany as yet.

The competition for markets differs from product to product, but is stiffest in gasoline and fuel oils.

In sales of diesel oil, for instance, the small independents are a minor factor. Between 70% and 80% of the diesel oil sold goes directly from the big oil companies to big consumers.

The small independents and newcomers have acquired about 12% of the gasoline market—a rise from practically nothing four years ago.

This percentage is still small compared to the 70% believed held by the big four—BV Aral, Esso, Shell, and BP. An additional 15% to 20% is held by other gasoline brands, such as Caltex (over 2.5%), Purfina (2.5%), Total (2%), Gasolin-Nitag (7%), and Rheinpreussen. These firms sell gasoline at identical prices.

Because of the increase in the share of the market held by the "white stations," the big companies apparently felt forced to reduce their prices. These reductions have brought the average price difference between branded gasoline and "white" gasoline down from 6.3¢ to 2.7¢.

The price reductions seemed to work, since the growth of the "white" market has now come to a stop. The number of white stations, however, is about 2,400 out of a total of 24,000 in Germany.

III. U.S. Firms Come In

U.S. companies are buying up German independents in an effort to gain outlets for their oil supplies.

- The 330-station independent Sopi Mineralprodukte GmbH. was bought last summer by Continental Oil Co. It is not quite certain yet whether, in the future, the stations will sell at the lower "white" station prices or at major-firm branded prices.
- The Swiss-backed independent, Turol, which intends to have 50 stations by the end of this year, has found "an American group" that will subscribe about 90% of Turol's planned share capital increase from $50,000 to $2.4-million.
- It is reported that the 120-station Volksraftsoff has been sold to an unidentified American buyer. Since the system was making money, the reason for the sale—if it was actually negotiated—can only have been a very tempting offer.

Competition is doubtless most fierce in the heating oil field.

The oil companies' big competitor is, surprisingly enough, the German coal mining interests, which were farsighted enough to enter the fuel oil

field by converting some of their coal sales organizations to oil sales firms.

Today these coal mining companies account for 40% of the light fuel oil sold and 10% of the heavy oil. In addition, there are some small fuel oil importers.

As a result of the competition in fuel oils, the price in Germany has dropped below world market level, causing red figures on balance sheets in 1958 and 1959 for the established oil companies.

For crude suppliers, the West German market is a hard one to crack. The German market is undoubtedly a limited one for newcomers, because the refineries generally have contracts under which a partner supplies crude and pays only the processing costs. Also, German refineries generally are tied to long-term delivery contracts.

German caution over the use of Russian crude has apparently been somewhat overcome by the big price advantage—$12.40 a ton, compared to the world market price of almost $22 a ton.

For a time, refiners here seemed reluctant to use Russian crude, partly because they preferred a secure supply to cheap sources that might dry up tomorrow.

Despite the existence of a German-Soviet trade agreement, not a single drop of Soviet crude crossed the border in 1958. But imports rose to 250,000 tons in 1959 and may reach more than 1-million tons this year.

Arab Price Policy Advance Claimed

(From PETROLEUM WEEK'S *Beirut Bureau)*

BEIRUT—The claim by Arab League oil official Mohammed Salman that oil companies have agreed to the "prior consultation" principle on price changes may have been sparked by Iraqi criticism of the League's recent Arab Oil Congress.

This is one evaluation of the undocumented claim that has puzzled oil circles since it was made by Salman, Secretary-General of the Congress, at a special news conference he called in Beirut nearly two weeks after the Congress closed.

With the possible exception of one independent producer in the Persian Gulf, industry circles believe that no company so far has flatly committed itself to getting prior approval of its host government on price changes.

This principle, seconded by the Oil Congress, was first aired at the earlier Baghdad meeting of five major oil exporting countries that set up OPEC, the Organization of Petroleum Exporting Countries.

OPEC includes non-Arab Iran and Venezuela, as well as Kuwait, Iraq, and Saudi Arabia. Of the five, only the latter two are members of the Arab League.

Failure to give stronger support to OPEC's Baghdad resolutions is one of the counts on which the Congress has been attacked by Iraqi newspapers of all shades—including those toeing the official line.

They also accuse the Congress organizers of placating the oil companies, and of failing to give stronger support to demands of Iraq in its current negotiations with Iraq Petroleum Co.

The Congress resolutions did not specifically mention the Baghdad conference, nor Iraq's negotiations with Iraq Petroleum Co.—despite efforts by the Iraqi delegation. As finally adopted, they merely upheld the efforts of Arab countries to improve the terms of their oil concessions and "disavowed" price cuts by companies without consultation with the governments of producing states.

Perhaps one of the most significant Iraqi attacks described the Congress as "impotent," and its resolutions as "abstract wishes without any plan of action."

This appeared in an editorial in Al-Bayan, official daily newspaper of the newly authorized National Progressive Party, headed by former Finance Minister Mohammed Hadid.

Although Hadid holds no government post for the moment, he is a key negotiator with IPC and is said to be chief economic adviser to Premier Kassim.

The Congress should have laid emphasis on the Baghdad resolutions as relating to oil prices and other matters applying to oil concessions, according to Al-Bayan.

Instead, Hadid's party newspaper said, the issues from which the Arab countries suffered were not discussed at high level, nor were any clear-cut and positive resolutions taken to reinforce those of the Baghdad parley.

A left-wing newspaper was even more critical of Congress Secretary-General Salman, who—it must be remembered—represents the views of the Arab League, said the paper, Al-Istiklal. Salman is an Iraqi who resides in Cairo and is director of the Arab League's Petroleum Dept.

"This man has no right to sing the praise of the oil companies with which the Iraqi republic is locked in bitter fight for Iraq's rights," the paper said, referring to an address by Salman during the Congress sessions.

It was presumably in answer to such criticisms that Salman implied that the Oil Congress had helped to win over oil companies to prior consultation on price changes.

The resolutions of the Congress, "though few in number, have far-reaching implications," he said in a prepared statement at the Beirut news conference he called to announce the success of the meeting.

To emphasize his point, Salman said efforts by the Congress, and the Baghdad meetings, to bring about solidarity among Arab producers and nonproducers—as well as non-Arab producers—had "led the companies operating in our countries to reconsider any proposed steps connected with the reduction of prices or other matters related to the production and marketing of oil."

"I am pleased to announce," he said, "that I have heard from reliable sources that if the oil companies find it necessary to reduce prices in the future, they will work out new ways of doing so which will not affect the revenues of any oil-producing state, and that they will take no step before consulting and obtaining the approval of the oil exporting countries."

This claim, which Salman declined to amplify, could not be traced to oil company sources.

Salman expects to represent the Arab League as an observer at upcoming OPEC meetings, including preparatory committee meetings in Baghdad on Nov. 30, and the first OPEC conference to be held in Caracas in January.

Some Arab League members, notably the United Arab Republic, reportedly are not keen to have the League committed too deeply in OPEC, a net exporters' group.

The League, it is pointed out, is made up of nonproducing as well as producing states. OPEC, some Arab quarters maintain, tends to exclude Arab oil-importing states from a say in Arab petroleum problems.

Hunt-BP Deal in Libya May Involve Kuwait Crude

Hunt International will sell British Petroleum an interest in its oil rights in Libya—reportedly in return for 4-million bbl. of BP's crude, and other considerations.

The oil presumably would come from Kuwait. The deal also may include additional foreign interests held by the Texas independent, PETROLEUM WEEK learned last week. At present, Hunt holds exploration rights in Pakistan and Australia, as well as Libya, but no foreign marketing stakes.

In Libya, Hunt has two concessions in Cyrenaica. Each is bordered by acreage of BP.

Hunt—which has no foreign production of its own—is known to be studying markets for the BP crude, though it declines any comment.

Hunt Oil Co. has a U.S. import quota of only 647 b/d. It is said to have been putting out feelers in the U.S. on the chance of selling the crude at posted prices.

Kuwait crude is posted at $1.59 for 31-31.9-gravity, with most of it sold under long-term contracts.

BP so far confirms only that it has been negotiating for an interest in Hunt's Libyan concession No. 65, an undrilled 12,700-sq. mi. tract Hunt was granted in December, 1957.

"Details of the arrangement," a London spokesman for BP told PETROLEUM WEEK, "will be disclosed after certain formal documents have been lodged with the Libyan government."

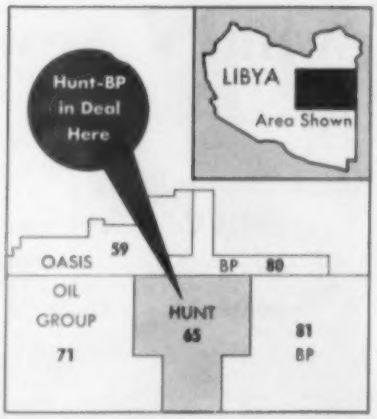
BP apparently hopes the Hunt block will give it a "trend play"; it has yet to find potentially commercial oil on its own Libyan acreage, so far as is known.

Though Hunt's No. 65 tract is in a remote and only sparsely drilled area, it lies in a direct southeasterly line from the productive trend tapped by several other operators.

So far, this trend extends from Libyan American Oil Co.'s Mabruk oil find on Concession No. 17, to Oasis Oil's Dahra on No. 32, to American Overseas Petroleum's Beda on No. 47, and to another Oasis Oil discovery on No. 59, on the northwestern border of Hunt's No. 65.

BP is currently drilling a second wildcat on its own Concession No. 80, on the northern border of Hunt's No. 65.

The first was carried to about 8,000 ft. in the Ordovician. No information has been released on the findings in this or any other wildcat BP has drilled in Libya to date. BP has been drilling on several of its eight scattered concessions, four of which are slated for reduction in January.



Hunt has been concentrating on its Concession No. 2, a 4,600-sq. mi. northern Cyrenaica tract due for reduction this month. Its first wildcat there was abandoned at 2,545 ft., and the second, about a half mile away, also encountered difficulties.

Libya Gives Relinquishment Data

TRIPOLI—The acreage to be relinquished soon by oil companies will, for the time being, be held in reserve by the Libyan government, the Petroleum Commission disclosed recently.

The commission gave the first indication of what it immediately planned for the land that will be returned beginning this month in a circular letter signed by A. Hogenhuis, Director of Petroleum Affairs.

The commission said it would decide at a later date what disposition will be made of the acreage, though it indicated new concessions would be granted eventually. Under the Petroleum Law, a company must give up 25% of each concession.

The acreage returned in each block should be "reasonably compact," the commission said, citing the main relinquishment provision of the Oil Law. The returned land should not have "narrow indentations or insubstantial links."

Also, the commission requested that the number of areas given up in each tract be kept at a minimum and include some concession boundary line areas, so that they could be combined to form a new concession "of valuable size and shape."

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What's New / AROUND THE WORLD

Libya Stiffens Rules On Contract Firms

LIBYA — Foreign oil contracting firms now have to prove that their services are needed in order to get work permits in Libya, the Minister of National Economy declared last week.

The minister said preference will be given to drilling and consulting firms that have Libyan partners or Libyan capital. Other firms will have to produce documents from oil companies proving the definite need for their services.

•

UNITED KINGDOM—North Ireland's first refinery will be a 30,000 b/d plant to be built at Belfast by British Petroleum. A "small portion" of output will be exported, BP said, and the rest marketed locally by Shell-Mex & B.P., Ltd. The $22.4-million plant will be completed in about two years.

•

NIGERIA—Mobil has spudded its first Nigerian wildcat, the No. 1 Ojo, about 12 mi. west of Lagos.

The company, which began exploration in late 1955, drilled a 7,051-ft. stratigraphic test 30 mi. west of Lagos last year without encountering oil shows.

•

JAPAN—An interest in a small independent refiner and marketer is reportedly being offered to the Japanese-owned Arabian Oil Co. as an outlet for its Persian Gulf crude—and as a starting-point for nationwide marketing.

The offer is being made by a holding company that is the major stockholder in Toa Oil, which has a 12,000 b/d refinery at Kawasaki. European and American majors, as well as Japanese refiners, also are said to have made offers to buy Toa.

•

IRAQ—The Government's oil revenues increased 10% in the first nine months, when crude output gained 14.4%. Government income from operations of Iraq Petroleum Co. totaled $196.7-million, up from $178.4-million in the same period last year. Output averaged 951,000 b/d, compared with 829,000 b/d in 1959.

•

LIBYA—ENI, the Italian state oil firm, plans to drill its first Libyan wildcat early next year on its Concession 82, near the Egyptian border.

The rig is already being built at ENI's Nuova Pignone works, near Florence, and will be shipped here by the end of December. ENI has two seismic, two gravity, and two geological crews working on the big concession.

•

SWITZERLAND—A plan is taking shape to increase Swiss product imports from France or Germany—instead of Italy. A products pipeline from the Rhine port of Basel, in northern Switzerland near the French-German border, to other consuming areas is proposed by Basel's local governments. They plan to form a joint company with private local interests to build and operate the line.

•

IRAN—The Consortium's new Kharg Island export terminal for 31-31.9-gravity Gach Saran crude was officially inaugurated last week. It is fed by a 26/28/30-in., 100-mi., gravity-flow pipeline with a capacity of 360,000 b/d. Crude from Gach Saran, which has been under intensive development, was previously shipped through a 60,000 b/d pipeline to the refinery at Abadan.

•

LIBYA—A total of 210 holes had been drilled or were currently being drilled in Libya by Nov. 1 since drilling started in 1957.

Busiest driller has been Oasis Oil (operator for Amerada, Continental, and Ohio), with 60 holes. Runner-up is Esso, which has drilled 35, not including the 21 tests drilled by the Esso Syrte-Libyan American joint venture.

•

SPANISH SAHARA—French and Italian companies may win their first stake in Spanish Sahara exploration under a deal with the U.S.-owned Magellan Petroleum, which has an application pending for Block 18.

The French government's Bureau de Recherches de Petrole and the privately owned Edison group of Italy reportedly will put up most of the exploration costs if Magellan is awarded the tract.

French government companies had lost out on previous efforts to win acreage in the Spanish Sahara, though they have since been granted rights in Spain itself.

•

Venezuelans Ask Oil Export Hike

CARACAS—A plea for efforts to increase Venezuela's oil exports has been made to President Romulo Betancourt by Venezuelan business groups.

The appeal was apparently an indirect criticism of the policies of Oil Minister Juan Perez Alfonzo.

It was made last week by the Federation of Chambers of Commerce & Industry (Fedecamaras), which played an important role in official talks on the currency exchange controls the government has imposed to halt the drain on its dollar reserves.

The possibility of marketing increased oil exports "on short terms" is suggested by "information worthy of credit," Fedecamaras said in an earlier message to the president.

"This measure," it added, "would not be in contradiction to the principle of the national government's oil policy—which is to develop this resource in accordance with the requirements of the country's development needs."

Correction

Former Libyan Premier Mustafa Ben Halim has denied he is a participant in Middle East Petroleum Services Co., Ltd., a new consulting firm set up in Beirut (PW—Nov.4'60,p41).

Ben Halim told PETROLEUM WEEK, he knew nothing about the firm, in which Emile Bustani, a Lebanese business man, has a major interest. The premier noted he is associated with another consulting firm, Eastern Investment Consultants Inc.

- One of the major **PEMEX** projects nearing completion is a 941-mile, 24-inch dry natural gas line from the absorption plant in Ciudad Pemex, Tabasco, to Mexico City, with a 165-mile, 14-inch extension to the farming and industrial areas of Salamanca.
- The main line runs across marshlands, plains and mountain ranges, with eight underwater river crossings. It branches out along the way to reach several industrial centers.
- High resistance X-52 Mexican produced steel plate was used 100 per cent to manufacture the cold expanded 0.625-inch, 0.438-inch and 0.344-inch pipe.
- Main line and branches will be completed simultaneously by the end of the year. Initial operation is scheduled for January 1961 to convey 220 million cubic feet per day to destination. Full capacity will be 550 million cubic feet.

PETROLEOS MEXICANOS

Care in Corrosion Control Pays Off

- **Pacific Lighting expects less corrosion on its Mohave Desert line as a result of extra care in planning.**
- **Design of line and its anticorrosion facilities was based on study of environmental conditions.**

Extra care and a willingness to depart from tried methods in designing a pipeline and its corrosion-control system is expected to save money for Pacific Lighting Gas Supply Co. on its new line across California's Mohave Desert.

The 116-mi. line went into operation last summer.

It runs from Needles, Ariz., to Newberry, Calif.

At Needles, the 34-in. line takes delivery of 300-million cf/d of gas from Transwestern Pipeline Co. and delivers it at Newberry to Southern California Gas Co. and Southern Counties Gas Co. (PW—Aug.19'60, p78).

In building the line and its corrosion-control facilities, special attention had to be paid to the unusual operating conditions on the desert, according to Thomas J. J. Degnan and N. K. Senatoroff, Pacific Light engineers.

Degnan and Senatoroff described the measures that were taken in construction of the pipeline at the recent south central region conference of the National Assn. of Corrosion Engineers, at Tulsa.

They pointed out that some of the measures were required because of the wide temperature fluctuations on the desert and because of an almost total lack of water.

A decision to operate the line "hot" (up to 135F), because of the scarcity of water, made it necessary to limit the angles of side-bends to avoid overstressing the line and cracking of its coating.

If water is available at a reasonable cost, it can be used for cooling compressor discharge on a pipeline.

The Pacific Lighting pipeline is designed to operate at temperatures ranging from 50F to 135F, the lowest temperature being the lowest encountered in the ground of the desert and highest being the maximum that the gas in the line will attain.

Lowest temperature of the ground was found to be 50F. Lowest temperature of the gas is 115F.

In addition to being able to withstand the broad variations in temperatures without undue expansion and contraction, the line also must be able to withstand the stresses of its internal pressure of 1,032 psi.

Degnan and Senatoroff calculated that the combined effects of temperature changes and pressure would subject the line to a longitudinal loading of 990,000 lb.

To minimize the effects that might result from this load, they decided to limit sidebends to an angle of one-half degree per lineal foot.

And, as an extra precaution, anchors were placed on over-bends, unless the backfill at the bend was at least 30 in. deep and its radius at least 1,020 ft.

Markers were also installed along the line to measure movement, and strain gauges were attached to the pipe at bends considered most critical. These indicators will be monitored at regular intervals during operation of the line and correlated with temperature and pressure.

Another measure expected to reduce corrosion costs is the use of insulating joints to electrically isolate various segments of the line, according to Degnan and Senatoroff.

These joints, which isolate the line from grounding at structures such as bridges, meter stations, and compressor stations, facilitate convenient analysis and protective treatment of the line, section by section.

One point where insulators were critically needed, though there was no foreign structure nearby, was at the crossing of the Colorado River.

Here, Pacific Lighting installed dual 24-in. lines, which were insulated from the lines on land on both sides.

Degnan and Senatoroff explain that the fact that the soil was of low-resistivity and therefore a good current conductor also made it imperative to bury two magnesium anodes in the river bed to drain current from the lines.

And this was necessary even though the lines had been given a double-thick protective coating and also had been coated with 2-in. of concrete to weight them.

Pacific Lighting found that it wasn't necessary to install as many test wire leads at a cost of $60 each along the line as are usually installed for a cathodic protection monitoring system.

"Popular practice for many years has been to space them at 2,000-ft. intervals along the entire route of a line," say Degnan and Senatoroff. "At a cost in the neighborhood of $60 each, this practice does not seem warranted. Locations so specified cause many test leads to be installed at locations that are almost inaccessible or unneeded, while some that are necessary are omitted. A more reasonable . . . plan is to install leads only in critical locations."

On Pacific Lighting's line, leads were placed at mid-points between block valves, at each casing (one lead on the pipe and another on the casing), at every buried insulating joint (one lead on each side), at each buried steel structure crossed, and at each foreign anode bed near the pipeline.

Delivery of molten enamel for coating by tank truck, instead of by the conventional method of shipping it in packaged drums, resulted in "one of the most significant savings," the two engineers say.

The reduction in enamel costs was particularly important since the severe pressure and temperature variations under which the line would operate indicated use of a special laminated coating, incorporating glass inner-wrapping and plasticized high-melt-point coal tar enamel.

The specification of bulk instead of drum-packaged enamel enabled the manufacturer to reduce its price by about $5 a ton to roughly that of conventional enamel, according to Degnan and Senatoroff.

Additional savings resulted from the fact that the handling of the bulk-shipped enamel requires less manpower than does the handling of solidified enamel.

The packaged-drum enamel must be broken into pieces before it can be melted and applied, whereas the hot liquid enamel can be applied as it is.

The two engineers note that trucking of melted enamel in unheated tank-trucks is limited to a radius of about 300 mi.—about 6 to 8 hours travel time.

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Small Pipeline Opens Big Markets

A 96-mi. connecting line between the pipeline systems of Texas Eastern Transmission Corp. and Buckeye Pipe Line Co. will open soon to give TET shippers access to new Midwest markets.

Texas Eastern's 2,063-mi. products system extends across seven states from Texas to Ohio with delivery terminals in six states.

The Buckeye products system, with the recent acquisition of the pipeline system of Tuscarora Pipe Line Co., now runs through seven states from New Jersey to Illinois.

The connecting link "will be ready in about a month," according to a Buckeye spokesman.

The link, which runs from Lebanon to Lima, Ohio, is described by Texas Eastern as being "important out of all proportion to its length."

The 10-in. line costs $3.2-million.

From Lima, Buckeye would be able to move products from Texas Eastern's line to markets in Ohio, Michigan, and Indiana.

As yet, apparently, it has not been finally determined which of the terminals on the Buckeye line in the tri-state area will receive products from TET for further distribution.

There are terminals at Lima, Toledo, Columbus, Cleveland, Norwalk, and Brecksville, in Ohio; at Owosso and Flint, in Michigan; and at Huntington, Indianapolis, Muncie, and Griffith in Indiana.

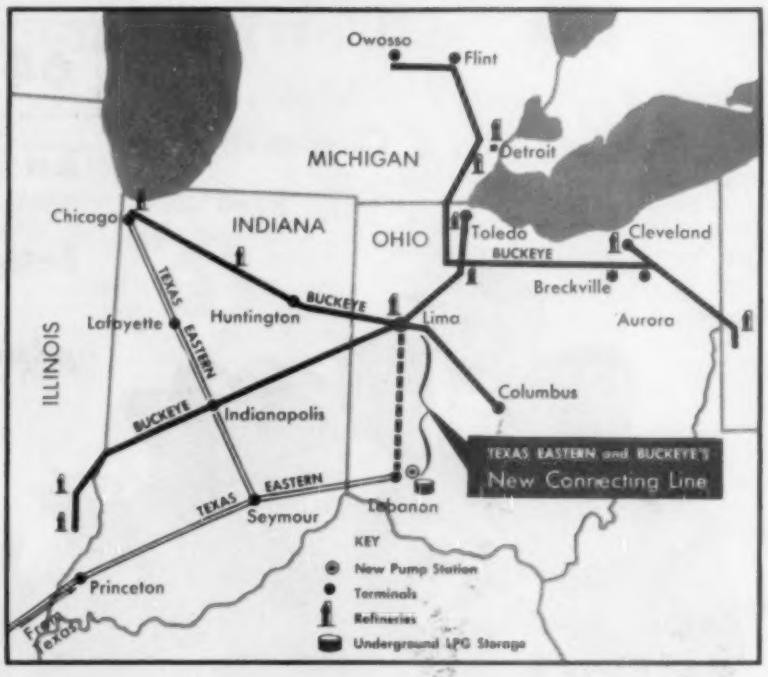
A source says that at the outset deliveries will be made to Columbus and Aurora, where TET has acquired a terminal site, but that routing plans haven't been finally worked out beyond that at this time.

Since Texas Eastern has a line of its own cutting nearly diagonally across Indiana from Seymour to Chicago, it presumably would use Buckeye's system only as far as Huntington, which is situated a considerable distance east of its line.

Texas Eastern says that the connection would enable it to transport products, via the Buckeye network, "to delivery terminals, refineries, petrochemical plants and Air Force bases, located near Columbus, Cleveland, and Toledo, Ohio; Huntington, Indiana; and Detroit, Flint, and Owosso, Michigan."

A Texas Eastern spokesman says the new line "will carry a full range of petroleum products."

Among the products slated thus far for delivery through the link are gasoline, heating oils, propane, and butane.



The two companies have not as yet issued tariffs, but they indicate that rates will be low enough to cut into rail and truck business in the area.

Texas Eastern lists as its main reason for building the line the cost of rail and truck transport to its shippers beyond the immediate area of Lebanon.

Without the extension, a spokesman says, "petroleum products produced in the Gulf Southwest and destined for movement to distant northern points faced formidable market barriers once delivered out of the Little Big Inch terminus at Lebanon . . ."

Cost of the line will be borne equally by Texas Eastern and Buckeye, as will cost of a new pump station at Lebanon.

Buckeye personnel will operate the line, and Texas Eastern personnel will run the station.

Buckeye Will Buy Tuscarora Line

Buckeye Pipe Line Co. will acquire the 300-mi. products pipeline of Tuscarora Pipe Line Co., which is owned by the Esso Standard division of Humble Oil & Refining Co.

The name—Tuscarora—will not be sold, however, Buckeye and Esso say.

The 10-in. and 12-in. Tuscarora line, which moves products east-to-west, runs from Macungie to Midland, Pa.

The line was originally built as a crude carrier in 1908, but was rebuilt as a products line in 1953.

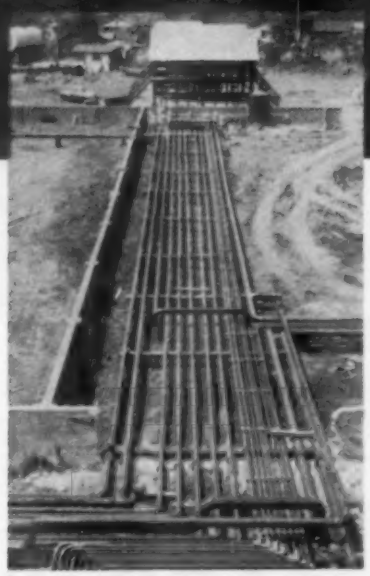
Connections already exist between Buckeye's eastern and western systems and the Tuscarora line, at Macungie and Midland, respectively.

Buckeye's eastern line runs from Linden, N. J., to Macungie, and then angles northward through Pennsylvania up into New York.

Since completion of the tie-ins, products have been moved from Esso's Linden refinery to Tuscarora's line, via the Buckeye line, for delivery in Pennsylvania and to Buckeye's Midwest network.

Terminals on the Tuscarora line are located near Reading, Harrisburg, Johnstown, Altoona, Pittsburgh, and Midland.

QUALITY PIPELINES



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Old Ocean Fuel Company builds 367-mile pipeline...

to meet needs of electric utility for huge quantities of natural gas

Pipeline to carry fuel gas from Old Ocean field to four of the steam-electric generating stations of the Texas Electric Service Company power system

Old Ocean Fuel Company, subsidiary of Texas Electric Service Company, has recently completed a gas pipeline which spans the 367 miles between the Old Ocean gas field in Brazoria and Matagorda Counties and the Fort Worth and Graham areas. Natural gas transported in this line will keep four of the great power plants of Texas Electric Service Company's power system humming.

A. O. Smith of Texas supplied 273 miles of 24-inch and approximately 24 miles of 20-inch "Made in Texas" pipe for this project. Since our first shipment of pipe in 1927, A. O. Smith has produced over 50,000 miles of large-diameter pipe. From our Milwaukee and Houston mills comes a dependable supply of pipe for almost every major pipeline project.

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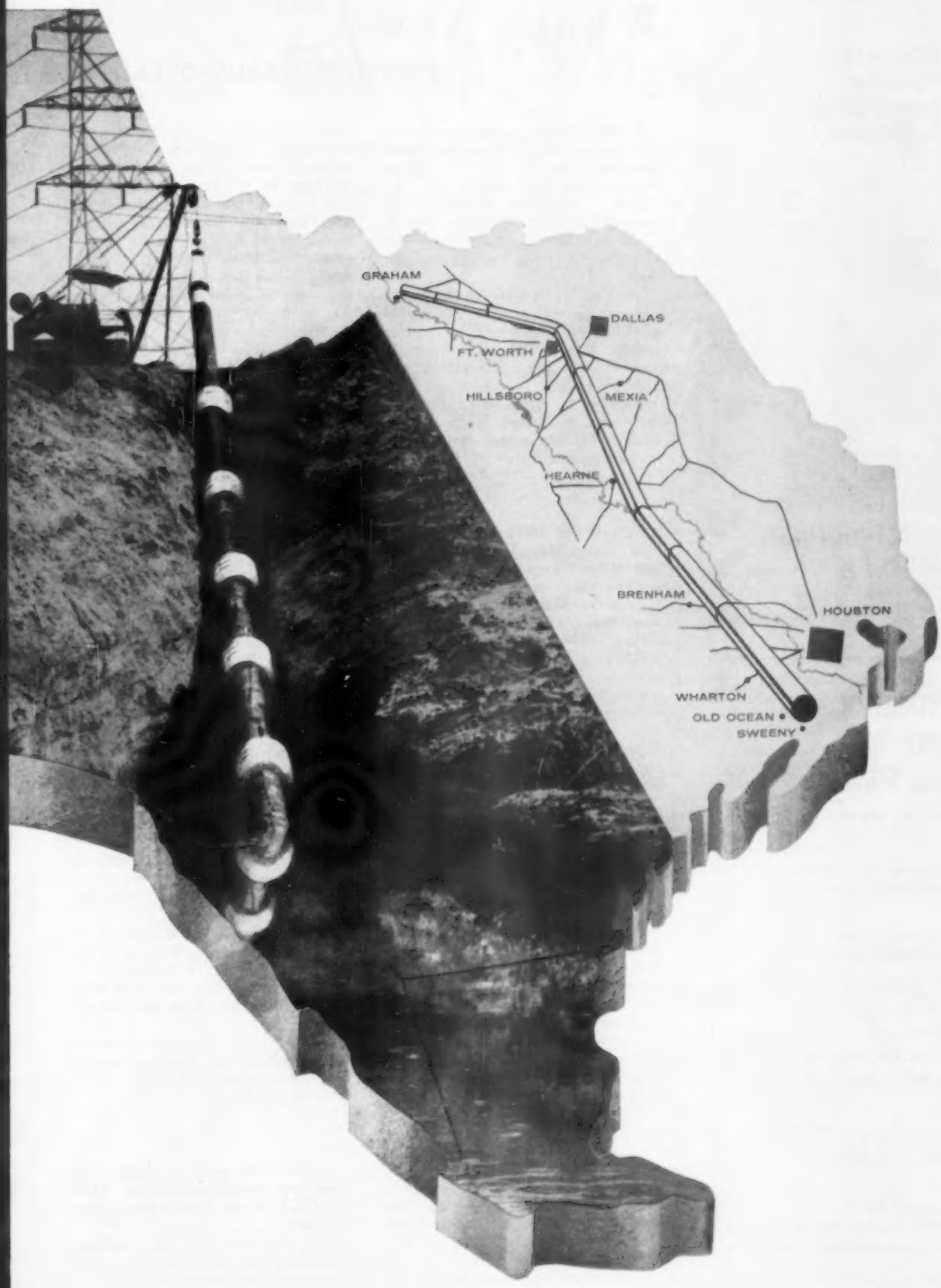
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What's New / IN TRANSPORTATION

A 400,000-bbl. underground storage cavern for LP-gas has been completed for Sun Oil Co. at its Marcus Hook (Pa.) refinery.

The 2,244,000-cu. ft. cavern was excavated by Fenix & Scisson, Inc. It is said to be the largest ever hewn out of granite, working through a single shaft.

Sun Oil, which says that the cavern and aboveground facilities cost under $3-million, estimates that surface tankage of the same capacity would have cost between $16-million and $20-million.

Most of the LPG to be stored in the cavern will be put in during the summer for use in the winter when demand rises sharply.

•

Natural gas sales by Trans-Canada Pipe Lines, Ltd., for the past 12 months have been running 70% higher than those during the preceding 12 months, according to James W. Kerr, president.

As a result of the rise in sales, Kerr says, Trans-Canada has passed the break-even point and is "now operating on a profitable basis."

Recently, the company reached a peak day delivery of 543-million cu. ft., as compared with a peak day shipment of 286-million cu. ft. during the earlier period.

Kerr credits the higher deliveries to two factors: market growth in Canada, and his company's exports to the U.S. (PW—Sep.9'60,p35).

•

Paul Blazer, of Ashland Oil & Refining Co., has been named chairman of the nominating committee of the National Waterways Conference—a new group formed to boost inland waterway transport.

One of the prime functions of the new organization will be to fight proposed charges for use of inland waterways (PW—Oct.7'60,p92).

•

Hudson's Bay Oil & Gas Co., Ltd., is planning to form a new company—to be known as Aurora Pipe Line Co.—to build its proposed natural gas byproducts line to the U.S. (PW—Oct.21'60,p18).

The 41-mi. pipeline would run from southwestern Alberta to near Cut Bank, Mont., where it would connect with a 433-mi. crude line to be built by Continental Pipe Line Co. from there to a connection with the Platte Pipe Line Co. system at Byron, Wyo.

An application to incorporate the new pipeline firm, which would have the right to operate outside Canada, has been filed with the Canadian government.

•

The number of idle tankers in the world's fleet has declined by 19.4% during the past 6 months, according to Charles R. Weber Co., oil and ship brokers.

Ships in layup number 324 as compared with 402 that were idle 6 months ago.

Of the idle tankers, 31 are U.S. flag and 293 are foreign flag.

Six months ago, 40 U.S.-flag vessels were inactive and 362 foreign-flag ships were idle.

Of the total of 324 tankers presently in layup, 249 were built prior to 1950.

•

Instruments to monitor the water and sediment content of crude have been installed by Trans-Arabian Pipe Line Co. on its pipeline from Saudi Arabia to the Mediterranean.

The monitoring devices were developed by Gulf Research & Development Co.

Sensing element of the monitor is a fixed capacitor, which is actually a probe-like device extending into the crude flow. This probe is sensitive to changes in the dielectric constant of the crude, and is thereby able to detect the presence of contaminants, such as water, whose dielectric constants are different from that of the crude.

In the event a contaminant is detected, the monitor actuates controls, which flash a signal to control headquarters on the line.

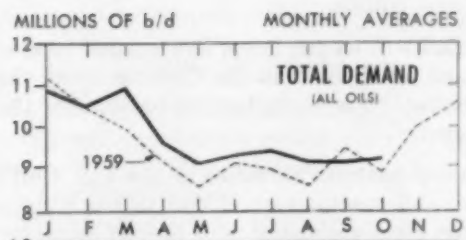
•

A new 16-mi. products pipeline has gone into operation between Shell Oil Co.'s Wood River refinery and St. Louis.

The 6-in. line will carry gasoline, range fuel, and fuel oil to a new marketing depot in the city.

PETROLEUM WEEK'S

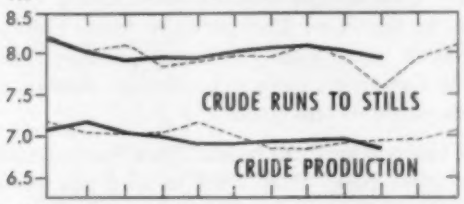
Fingertip Figures



Figures for period ended Nov. 11, except as noted

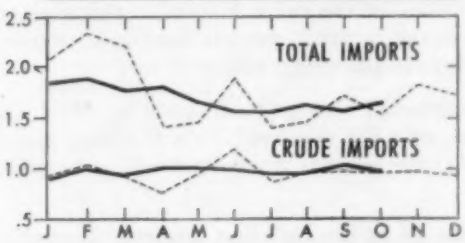
TOTAL DEMAND
Latest 4-week average *
Year ago 9.934

DISTILLATE DEMAND
Latest 4-week average *
Year ago 2.183



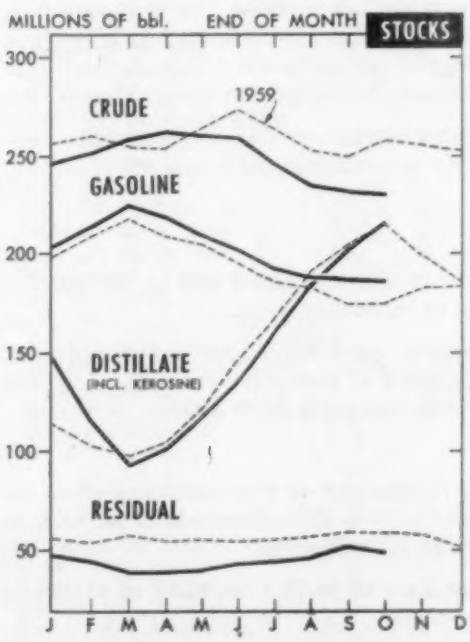
RUNS TO STILLS
Latest week *
Previous week 7.830
Year ago 7.892

CRUDE PRODUCTION
Latest week *
Previous week 6.940
Year ago 6.878



TOTAL IMPORTS
Latest week *
Previous week 1.657
Year ago 1.826

CRUDE IMPORTS
Latest week *
Previous week .985
Year ago 1.064



CRUDE STOCKS
Week-ended Nov. 5 232.4
Previous week 230.8
Year ago 254.0

GASOLINE
Latest week *
Previous week 184.4
Year ago 176.4

DISTILLATES
Latest week *
Previous week 217.2
Year ago 211.6

RESIDUAL
Latest week *
Previous week 49.1
Year ago 58.0

Rotary rig activity in the U.S. during the first ten months of 1960 averaged 16.3% under the like period a year ago. But total well completions were off only 5.7%.

Statistics compiled by Hughes Tool Co. show that rigs cutting hole in the U.S. averaged 1,735 units through October of this year, compared with 2,074 in 1959.

On the other hand, approximately 38,000 completions were made during the first ten months of 1960, against the 41,900 through October, 1959, as reported by the American Petroleum Institute.

While this may seem paradoxical, there's a logical answer: increased efficiency of operation.

Improved tools and modern techniques are making it possible for the operator to cut rig time on each location.

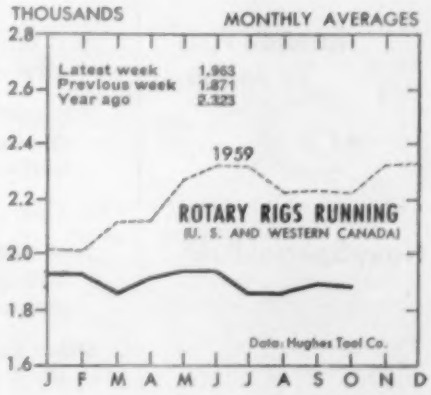
At the current rate of well completions, it's likely that the estimated 46,000 to 47,000 holes forecast for 1960 will be reached.

With completions averaging an estimated 1,000 per week over the next nine weeks, and some 38,000 wells completed so far, the total completions projected for this year should be within easy reach.

Actually, 1960 is not making a poor showing. Completions totaled 49,142 in 1958 and just 43,287 as little as ten years ago.

* * *

*Due to the API annual meeting, most figures for the week ended Nov. 11 were unavailable at press time.



The Market Trend

A Marketing Art: How to Write Contracts

How do you write a long-term supply contract in foreign trade these days? This is not an academic question for U.S. oil men. They increasingly are looking to foreign fields for new outlets.

The trick is to write a deal that will let the buyer live against competition from Middle East crude, and products from the Caribbean and the Black Sea. It isn't easy, and the problem is being tackled by some of the best marketing brains in the industry.

Do you base a long-term supply contract on prices at the U.S. Gulf? The Russians still do it, but most U.S. marketers feel that this is a risky course. The Soviet traditionally has given a discount off U.S. Gulf prices for shipments f.o.b. the Black Sea. But many Europeans feel that the U.S. Gulf is too insulated by tariff walls and ratable crude flow to be a good barometer abroad.

Do you hang your supply contract on prices posted in the Caribbean for spot cargoes? This has been a troublesome area for contracting purposes. Gas oil and fuel oil deals to northern Europe have proved very onerous to the buyers who hung their hats on the Caribbean. The reason: Major oil company postings in the Caribbean have not reflected discounts —as much as 40¢ a bbl. on fuel oil much of the time.

Can you try an "estimate of the market" approach? This has worked on some cargo contracts. But the seller really must wish to keep the business contract, and give a fair estimate of the cargo market at the time of the sale. This type of selling, however, is out if you are dealing with governments. Governments want things in black and white.

Can you try a realization approach? Can you sell crude to a refiner, basing your netback on what he gets for gasoline? This is risky, too— many formerly "clean" countries (without price wars) soon will be invaded by newcomers.

The whole problem is complicated by the fact that western oil companies do not have the force of government behind them. One of their roughest competitors is the Soviet Union—where the oil agency is an arm of government. Also, some of the biggest buyers in world trade are the governments themselves: Brazil, Mexico, Argentina, Uruguay, Greece, etc.

Summing up: In a well-supplied market, writing a contract is a very thorny question. It's toughest when governments get in the act.

Russian Fuel To Japan:

Just to cite what U.S. oil men are up against, take a look at the Russian cargo of low-sulfur fuel oil sold to Japan last week.

The price is reliably reported to be in the $16-$17-a-ton range, delivered, or about $2.53 a bbl. The f.o.b. price of low-sulfur fuel oil in the U.S. Gulf—a prime source in this hemisphere—is $2.55 a bbl.

Navy Special Fuel:

Last week, 6-million bbl. of Navy Special fuel oil were auctioned off to the Military. The apparent low was Gulf Oil, f.o.b. Puerto la Cruz, with an offer of $1.76, less 3% for cash, on 1.4-million bbl.

Other Caribbean bidders included Esso at $1.75 firm, Shell at $1.74 less 1½% discount, and Texaco at $1.725.

The Market Place

AROUND THE WORLD

Prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service and National Petroleum News, McGraw-Hill Publications

All prices as of November 11

Bold face type indicates changes from previous week

KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

Western Hemisphere

U.S. Gulf Coast, cargoes
- Gasoline, 98 oct prem 12.25-13.25
- Gasoline, 92 oct reg 11.25-11.5
- Kerosine 9-10
- Heating oil, No. 2 ..... 8.25-9
- Gas oil, 48-52, d.i. 8.5-8.875
- Fuel oil, bunker "C" $2.30

Caribbean, cargoes
- Avgas, Grade 100/130 ..... 14.75
- Gasoline, 93 oct research prem 11
- Gasoline, 87 oct research reg 10.125
- Gasoline, 80 oct research 9.375
- Gasoline, 70-72 oct motor method 9.25
- Kerosine 9.25
- Heating oil, No. 2 ..... 8.125
- Gas oil, 48-52 d.i. 8.375
- Fuel oil, bunker "C" $2.00

New York Harbor, barges
- Kerosine 10.1-10.2
- Heating Oil, No. 2 ..... 9.1-9.2
- Fuel oil, No. 6 ..... $2.62

Okla.-Group 3, northern shpt., bulk
- Gasoline, 91 oct reg 12.5-13.25
- Kerosine 10.5-10.625
- Heating oil, No. 2 ..... 9-9.25
- Fuel oil, No. 6 ..... $1.80-1.90

Chicago, bulk
- Gasoline, 92 oct reg 12.625
- Heating oil, No. 2 ..... 9.5-11.35
- Fuel oil, No. 6 high sulfur 7.65

Los Angeles, rack
- Gasoline, 88 oct reg 11-12.65
- Diesel fuel, PS 200 ..... 7.75-11.25
- Light fuel, PS 300 ..... $2.90
- Heavy fuel, PS 400 ..... $2.05-2.45

Natural Gasoline, Grade 26-70
- FOB Group 3 ..... 4.5
- FOB Breckenridge, Tex. 4

LP-Gas
- Propane, Oklahoma (Group 3) 4.5-5
- Propane, Baton Rouge 5.625

Pennsylvania Lubes
- Bright stock, 25 p.t. 25
- 200 vis. neutral, 25 p.t. 28

Mid-Continent Lubes, Tulsa basis
- Bright stock, solvent, 95 v.i. 26-27
- Neutral, solvent, 200-210 vis. 23-24

Gulf Coast Lubes
- Bright stock, solvent, 95 v.i. 26
- Neutral, solvent, 200 vis. 23

Eastern Hemisphere

Singapore (Pulau Bukom) cargoes
- Avgas, grade 100/130 ..... 15.5
- Gasoline, 79 oct research 9.125
- Kerosine 9.625
- Gas oil, 48 d.i. minimum 8.75

KEY PRICES—CRUDE OIL

(2¢ differential per deg. of grav. applies except as noted)

Western Hemisphere

United States (at the well)
- Mid-Continent, (Okla.-Kan.), 36.0-36.9 .... $2.69-2.97
- North Dakota, 36.0-36.9 ..... 2.47-2.87
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9 ..... 3.50
  - Gulf Coast, Upper & Lower, 26.0-26.9 .... 2.92-3.22
  - West Texas, sweet, 36.0-36.9 ..... 3.00
  - West Texas, N.M., inter., 36.0-36.9 ..... 2.93
  - West Texas, N.M., sour, 32.0-32.9 ..... 2.71
  - East Texas, flat 3.05-3.25
  - Mirando, 28.0-28.9 ..... 2.96-3.31
- Illinois Basin, flat 3.00-3.05
- Pennsylvania Grade, Bradford dist., flat 4.80
- California, Signal Hill, 21.0-21.9 ..... 2.33†
- North Louisiana-Arkansas, 36.0-36.9 ..... 2.72-3.02
- Wyoming, sweet, 36.0-36.9 ..... 2.85-2.90
- Wyoming, sour, 32.0-32.9 ..... 2.63-2.71

Canada (flat prices, at the well)
- Pembina (Alta.) $2.38
- Leduc-Woodbend (Alta.) 2.53
- Redwater (Alta.) 2.42
- Steelman A (Sask.) 2.425
- Virden (Man.) 2.285

Venezuela (Cargoes, FOB lifting port designated)
- San Joaquin, 41.0-41.9, Puerto la Cruz $3.10
- Oficina, 35.0-35.9, Puerto la Cruz 2.80
- Tia Juana, Medium, 26.0-26.9, Amuay 2.30
- Bachaquero, flat, La Salina 1.85
- Lagomar, 31-31.9, Cardon 2.55
- Lagunillas Heavy, flat, La Salina 2.07

†*Differential per deg. of grav. varies*

Eastern Hemisphere

Middle East, Persian Gulf (Cargoes, FOB lifting port)
- Arabia, 34.0-34.9, Ras Tanura $1.80
- Safaniya, 27.0-27.9, Ras Tanura 1.47
- Iran, 34.0-34.9, Bandar Mashur 1.78
- Iran, 34.0-34.9, Abadan 1.73
- Iraq, 35.0-35.9, Fao 1.72
- Kuwait, 31.0-31.9, Mina-al-Ahmadi 1.59
- Qatar, 41.0-41.9, Umm Said 1.95
- N. Zone, Burghan, 23.5-24.4, Mina Saud 1.48
- N. Zone, Ratawi, 23.5-24.4, Mina Saud 1.41
- N. Zone, Eocene, 16.5-17.4, Mina Saud 1.28

Middle East, Eastern Mediterranean
- Arabia, 34.0-34.9, Sidon $2.17
- Iraq, 36.0-36.9, Tripoli, Banias 2.21

North Africa, Phillipeville, Algeria
- Hassi Messaoud, 48 and above ..... Withdrawn

KEY TANKER RATES

(Last paid, per long ton, single voyage)

U.S. Gulf-New York, clean ..... (USMC—17½%) $2.35
U.S. Gulf-New York, dirty ..... (USMC—20%) $2.28↓
NWI-USNH, dirty ..... (USMC—47½%) $1.44↓
NWI-UK/Cont., dirty ..... (Scale—55%) 14/9*
Persian Gulf-UK/Cont., dirty ..... (Scale—40%) 35/7*
Persian Gulf-USNH, dirty ..... (USMC—65%) $4.45

**Sterling*

Jobbers Ponder Value of Cooperation

Two potentially conflicting solutions to jobber problems were put forward last week, one by E. K. Bennett, the other by Otis Ellis, both of the National Oil Jobbers Council.

Bennett, who is president, and Ellis, who is general counsel, spoke at NOJC's annual meeting last week in Chicago.

Ellis, in his talk, brought attention to the growing menace of government encroachment on free enterprise, while Bennett focused on the growing awareness of jobbers of the difficulties in earning a profit.

In seeking ways to solve these problems, both Ellis and Bennett turned toward legislative matters, but they differed in the approach they would consider.

Bennett recommended a sort of clearing-house, where dealers, jobbers, refiners, and producers could come together to discuss each other's problems.

"I think," he said, "we ought to give consideration to some plan that would enable all segments of this industry to analyze proposed or pending legislation, and if possible try to come with a united front."

He apparently saw increasing recognition among all segments of the industry of the need for unity. Besides jobbers, integrated companies and independent producers had come to realize the necessity for industry profits at the marketing level, he said.

Ellis, on the other hand, told jobbers that cooperation had earned them little in the past year and that now they should put "self-preservation" first.

The NOJC general counsel said that such a shift in emphasis would not conflict with Bennett's spirit of cooperation. But it was apparent that Ellis had become disenchanted with the fruits of cooperative effort, especially at the legislative committee tables in Washington.

He accused major companies of preaching "loud and long" through increased public relations efforts, but failing to "pull shoulder to shoulder" in a move to promote the industry's stand in Washington.

He said that the majors had done nothing to fight fair trade legislation, functional discount bills, divorcement, and S-11 (the bill that would outlaw good-faith as a defense in discriminatory pricing).

The integrated companies and independent producers, Ellis said, only rallied against governmental moves that would affect them directly, such as threats to percentage depletion and increased import restrictions.

In the future, Ellis recommended that jobbers seek favorable compromises in legislation, rather than attempting to block adverse bills entirely.

The jobbers' position on minimum wage legislation is an example of such a compromise position. At the last session of Congress, Ellis said, the jobbers settled for exemption from overtime provisions of the minimum wage bill, when they could not be exempt from the increased minimum wage provisions themselves. (The bill eventually died in the postconvention session of Congress in August).

In the future, the jobbers might consider taking a compromise position in percentage depletion, rather than fighting against any reductions at all, he suggested.

This policy of a slow retreat rather than the steadfast stand on the legislative battlefield, said Ellis, was actually a move toward adopting the major's own "rules of game."

While Ellis seemed convinced that "self-preservation" would be more beneficial to jobbers, Bennett, in his talk, held to his faith in cooperation between jobbers and suppliers.

"This to me is very, very basic," said Bennett. "If we work together our chances of getting the job done to the mutual benefit and satisfaction of everybody is much greater."

However, Bennett emphasized that "I have not suggested that we do anything." He called his plan for a legislative clearing-house only an idea to be considered.

In effect, he left the formation of NOJC's policy toward the rest of the industry up to the jobbers. He put the question this way: "Do we or would we want a policy stating that we want to cooperate with other segments of industry?"

Bypass Stations Team Up with Motels

This new station, opened by Cities Service Oil Co. in Tulsa, is typical of a new and growing breed of service station: the bypass station.

Unlike the turnpike outlet, which is designed to offer only gasoline and oil, bypass stations provide more or less complete servicing.

They also differ from turnpike stations in the company they keep. Located on highways that bypass major cities, these outlets are most often found huddled next to motels or motor lodges, rather than restaurants.

With a motel as a neighbor, the bypass outlet derives its entire repair and service revenue from over-night tourists.

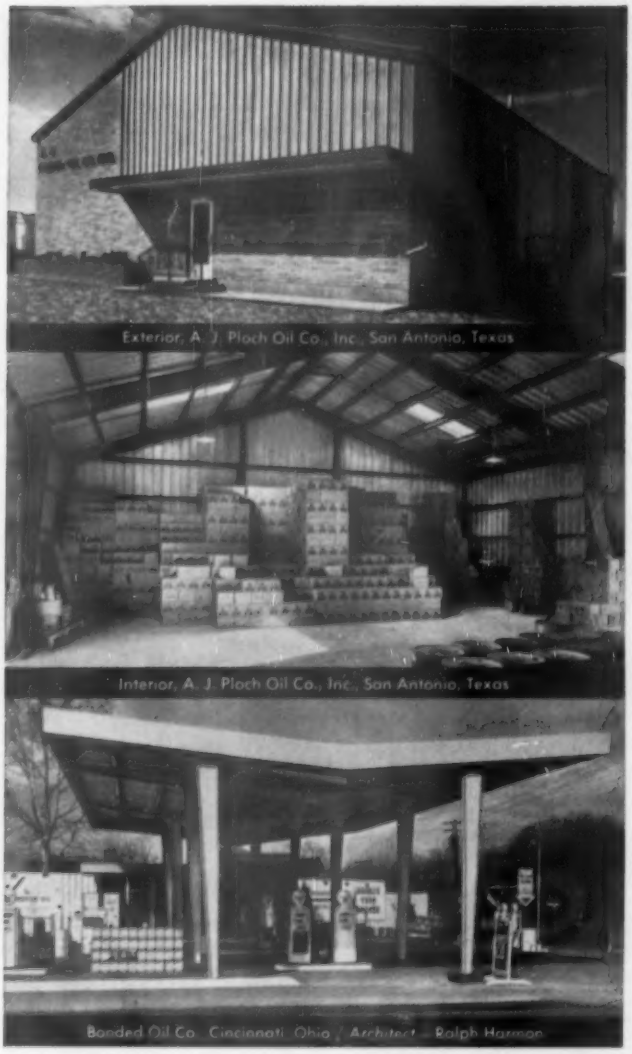
Fundamental to the bypass station is bright illumination and 24-hour service.

One fourth of the station's initial cost may be invested in signs and lighting alone, enabling it to team up with the motel in attracting road-weary motorists.

With 24-hour operation, the dealer can promise a guest that his car will be ready in the morning—completely serviced.

At this Cities Service station the lift and car-washing facilities are located outdoors, but provision has been made for enclosing them in a bay if necessary.

Throughout the entire marketing cycle



Exterior, A. J. Ploch Oil Co., Inc., San Antonio, Texas

Interior, A. J. Ploch Oil Co., Inc., San Antonio, Texas

Bonded Oil Co., Cincinnati, Ohio / Architect — Ralph Harmon

...BUTLER BUILDINGS BOOST PROFITS

From bulk plant to service station, Butler buildings can help you build sales . . . reduce costs . . . increase profits. The reasons are simple. Two new exclusive curtain wall systems offer you traffic-building beauty with a substantial look that promotes customer confidence. Pre-engineering and precision factory-fabricated components offer economies achieved only through mass production. But that's not all.

Butler bulk plant buildings offer you a unique combination of freedom of space and superior protection for warehouses and maintenance buildings. Post-free, truss-free interiors, up to 120 feet wide, let you use every inch of floor space for storage and blending of oil and grease. Unobstructed storage up to the roof simplifies inventory of cases of canned oil and TBA items. Positive protection is provided with precision-formed wall and roof panels that provide a weathertight fit. And, Butler all-metal buildings are completely firesafe.

Butler service stations build traffic in fair weather or foul. Butterfly canopies let customers drive in easily and buy in comfort. And, they protect merchandise and displays. The net result is that you pump more gallonage, increase oil ratios and sell more TBA.

When you develop or expand a marketing territory, call your local Butler Builder . . . just one call will satisfy most of your building needs from bulk plant to service station. Ask him about Butler financing, too. See the Yellow Pages under "Buildings" or "Steel Buildings" . . . or write direct.

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Ohio Market Battle Hits Cleveland

The battle for markets that has recently broken out in long-quiescent Ohio is focusing on Cleveland.

Rumors of marketing executives scouring the city for suitable service station locations have begun to inflate real estate prices.

At present, the new campaign for Cleveland gallonage includes only Phillips Petroleum Co. and Ohio Oil Co. But, maneuvering in the distance, is Humble Oil & Refining Co., which invaded Ohio in September.

Humble Oil & Refining Co. said last week that it intends to consolidate its marketing operations in southeastern Ohio before girding for an expansion into lucrative Cleveland.

James T. Outz, general manager of Humble's Ohio division, said last week that he is currently scouting the Akron area for prime service station locations. At present, the company is building in Youngstown, where it opened its first (converted) station in September, and Columbus (PW—Oct.7'60,p97).

Eventually, Outz plans to establish Cleveland as the headquarters for northeastern marketing operations, with Columbus controlling the southern quarter.

At present, Humble seems to have given little thought to expanding into northwestern Ohio.

One reason may be the location of Humble's four product terminals, which are situated just across the Ohio border in Pennsylvania and West Virginia.

These terminals, which ring southeastern Ohio with convenient sources of supply, have figured significantly in Humble's expansion into the state. They have obviated any new terminal construction, and have facilitated the company's plunge into Ohio.

Meanwhile, Phillips Petroleum Co. and Ohio Oil Co. have revealed plans to move into Cleveland.

Phillips, in fact, has been negotiating for 25 sites in Greater Cleveland, six of which will be company operated and the rest operated by jobbers. (Humble has put off reseller distribution until it can create the brand image it desires in Ohio.)

In the long run, Phillips is aiming for 200 stations in the Greater Cleveland market. At present, the company has only 150 stations in all of Ohio.

Ohio Oil, which recently moved to within easy distance of Cleveland with the construction of a products terminal in the suburbs, revealed that it is scouting around for service station properties in the city.

The company also plans to purchase existing stations and convert them to the Marathon brand. In addition, Ohio Oil intends to open a sales office in Cleveland.

Standard Oil Co. (Ohio), in a parallel development, is accelerating its credit card program throughout the state.

In a move aimed at "signing up customers before the newcomers can get to them," Sohio is stepping up its STEP program.

This program is designed to increase Sales Through Employee Participation. Recently, one-third of Sohio's new credit card accounts have been acquired through employees.

According to the company, one half of all the credit cards issued in Ohio now bear the Sohio oval. But the market has plenty of room for other aggressive suppliers: Two out of three Ohio motorists do not carry a credit card.

Motorists Shown Dissatisfied With Car Operation in Winter

Marketers who are looking for advertising themes to use in pushing gasoline sales this winter will find several hints in a recently announced survey by Sun Oil Co.

The Sun survey was designed to sample customer reaction to winter-performance problems, with individual attention to starting, warm up, and stalling difficulties.

Sun also sought to determine whether brands of gasoline have a bearing on the motorists' views.

Sun found that half of the motorists who answered the survey were annoyed with the performance of their cars during winter.

Even though dissatisfied carowners were more likely to answer the survey than those who experienced no problems, Sun was surprised by the great number of complaints.

The survey was mailed to 4,000 motorists, 1,283 of whom replied. Of these, 51% complained about one or more of the problems mentioned in the questionnaire.

These results were presented to the Society of Automotive Engineers in Tulsa early this month by C. S. Gilbert, Jr., technical assistant to Sun's manager of marketing research, and E. F. Marshall, assistant manager, of Sun's product development division.

Chief among the motorists' complaints was their criticism of the sluggish operation of their cars during warmup.

This problem was cited by 38% of the motorists in the survey. Starting difficulties brought censure from 18% of the motorists, and 24% were unhappy with the undue stalling of their cars.

Some motorists (5.3%) volunteered the comment that "cool, damp mornings" caused most of the stallings.

The Sun executives reasoned that carburetor icing was actually at the root of their problem.

The motorists were unable to detect any variation in winter-performance when they switched brands of gasoline.

The Sun researchers suggested three reasons for this:

- Gasolines sold at service stations today represent a compromise in volatility design: Some may be poor in warmup qualities but excellent in guarding against icing, and vice versa. Thus, over-all performance is blurred.
- Consumers rarely have the opportunity to compare gasolines under comparable conditions.
- Advertising, merchandising, and general sales efforts can impose "positive product images" over the judgment of motorists.

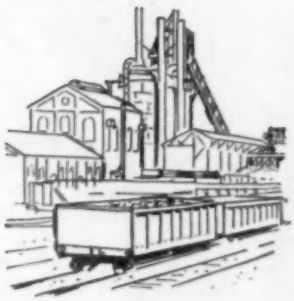
This last factor suggests that oil marketers may have some influence in shaping the opinions that motorists form in connection with gasoline performance.

But at present, Sun found that only 38% of the motorists feel that winter performance varies with changes in gasoline brand.

However, motorists in severe climates tend to be more critical of gasoline performance in winter.

Sun learned this by sending half of their questionnaires to motorists in Syracuse, N. Y., and half to motorists in warmer Philadelphia.

In Syracuse, 43% answered "yes" to the question: Does gasoline brand affect winter performance? But a lesser proportion (34%) of the Philadelphia drivers answered affirmatively.



Tons of iron ore turned into molten pig iron and from this . . . steel. From research have come steels that can withstand the most intense heat and cold . . . steels that will help man conquer space.

there's more to Cities Service than meets the eye!

It takes 523,451 men and women . . . far-reaching exploration teams, transportation systems, testing and research labs to produce the steel we use. America produces more than 85 million net tons of steel each year to meet the demands of consumer and industry. Yet few of us ever think of all that goes into manufacturing this "everyday" metal.

And few of us pulling into the green-and-white Cities Service station to "fill her up" realize all that lies behind today's quality gasolenes. Cities Service uses a pipeline system that could circle the globe. We search five continents for oil and maintain the most modern research laboratories and refineries.

Cities Service has invested over a billion dollars in product improvement and development. The challenge of tomorrow requires even greater investment.

Only in this way can America have what it needs for progress—more jobs and more and better oil products.

CITIES SERVICE

50

What's New / IN MARKETING

Do shopping centers boost service station demand? An impromptu survey of Sun Oil Co. stations poses some doubts.

Sun checked the gallonage of 30 to 35 stations both before and after the arrival of a modern shopping center on the scene. All the Sun stations were located within 1,000 ft. of the centers.

The results: "Wildly inconclusive," Sun says. "In some stations gasoline sales went up as much as 50% when a shopping center opened nearby, in others they plummeted. Some stations added to centers did extremely well, others did poorly.

Now all that can be said about shopping centers, Sun asserts, is that they "do attract automobiles."

Easy as ABC... A new city in the Argentine

NEEDED: An oil operations base housing 625, to go ocean freight to Puerto Deseado, Argentina and 180 miles inland by rail. Fast, easy completion was assured by Houston Ready-Cut House Company's factory prefabrication. Living quarters, hospital, mess hall, recreation, storage, warehouse, freezer and office buildings are all in the package. Whether you need structures in Argentina or Iran, Alaska or Libya, Houston Ready-Cut can speed the job. Call or write . . .

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Now movie houses are going in for gasoline sales—in the United Kingdom, at least. Rank Film Distributors, Ltd., plans to sell gasoline at a few of its houses.

The first station will open early next year at a Worcester (England) cinema. Later, Rank will open stations throughout the country wherever its movie locations provide "good frontages and car parks."

•

The trend toward smaller compact cars will receive added impetus next year when Studebaker-Packard Corp. starts production of a compact compact.

This car, which will be introduced in the fall of 1961, will be smaller than conventional compact cars but larger than the Volkswagen.

Ford Motor Co. is also planning to introduce a small compact car next year. And the auto industry expects that General Motors Corp. and Chrysler Corp. will follow suit.

The Studebaker car will be a conventional automobile—except for size. Ford's small compact, however, will use a front-wheel drive.

•

Grease manufacturers were told to fall back on the safety theme in attempting to push sales.

Huntington Eldridge, president of Chek-Chart Corp., told members of the National Lubricating Grease Institute to promote a combined program on preventive maintenance, safety inspections, and lubrication.

This he said will not only protect the motorist and his car, but will help dealers to sell more lubes, oil, and TBA.

•

In the seesaw struggle to outlaw trading stamps in Wyoming, 800 motorists have petitioned for the repeal of an anti-stamp ordinance in Worland.

The Worland municipal law is based on a Casper (Wyo.) ordinance banning trading stamps. Recently, a district court judge in Casper refused to declare this ordinance unconstitutional. However, a state law prohibiting stamps has been ruled unconstitutional by a district court in Cheyenne.

Meanwhile, in Worland, service station dealers are watching the progress of the prostamp petition. The dealers had circulated the petition at their stations because, a trading stamp company says, they had been losing gallonage to towns where stamps are still distributed.

WHY SO MANY COME BACK FOR MORE...

Superior service in process construction is evidenced by repeat business from satisfied customers. Such happy evidence abounds at Procon.

Once a petroleum refiner or chemical processor has placed his trust in Procon, he develops the kind of confidence that brings him back again and again. Within a few years . . . or even months . . . a single-process-unit customer may be back with a contract to build an entire refinery.

In one recent case*, for example, contract followed contract from the same customer, for a total of eight . . . calling for 15 separate units to be erected at three different locations, and having a combined capacity of 300,000 BSD!

Three out of four contracts currently awarded Procon represent repeat business from satisfied customers . . . evidence of previous jobs well done.

**Name on request*

*'62 could be the year for you

*A SUBSTANTIAL INCREASE IN PROCESS CAPACITY will be needed by 1962, according to reliable estimates . . . NOW is the time to start your planning!

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WORLD-WIDE CONSTRUCTION FOR THE PETROLEUM, PETROCHEMICAL, AND CHEMICAL INDUSTRIES

E. P. BOYNTON has been elected vice-president of Pan Geo Atlas Corp., Houston, a subsidiary of Chemetron Corp., which offers well logging, perforating, and related services to the oil industry. He was formerly in charge of Chemetron's patent department, and assistant to **Charles J. Haines**, chairman and chief executive officer, with offices in Chicago. In his new position, Boynton will share administrative duties with **Paul Charrin**, president of Pan Geo Atlas, and **J. H. Castel**, executive vice-president. He will also be in charge of patent and legal matters.

E. P. Boynton A. G. Evans-Lombe

A. G. EVANS-LOMBE, formerly vice-president and general manager of Parkersburg Rig & Reel Co., in Ft. Worth, is a new special representative for Iverson Supply Co., Tulsa. Evans-Lombe, who began his career in the oil industry with Superior Oil Co. of Oklahoma, now Sunray Mid-Continent Oil Co., has been associated with the industry for 35 years.

DANIEL H. REAT has joined Camco, Inc., Houston, as advertising manager. Camco manufactures gas lift equipment and subsurface production tools. Reat was most recently assistant to the advertising manager of Reed Roller Bit Co., Houston. He has also been advertising manager of Bowen-Itco, Inc., Houston.

LOUIS G. MONTRE moves up to chief engineer for Cardwell Mfg. Co., and **Edward V. Hobbs** is the new assistant to the chief engineer. Both men will be located at company's Wichita (Kan.) office. Montre has been with Cardwell for the past twenty years.

WILLIAM L. OLIVER has been elected chairman of Dorr-Oliver, Inc., Stamford, Conn., engineering and manufacturing company specializing in fluid and particle dynamics. Oliver has been vice-chairman since 1956, and also serves as general counsel for the company. He is a partner in the law firm of Hall, Henry, Oliver & McReavy, in San Francisco.

EDWARD J. MURSKI has been appointed district manager of the new Victoria (Tex.) office of Associated Engineering & Equipment Co., Houston. He will supervise general wire line services and reservoir testing in all areas south and west of the Colorado River in South Texas. Murski has been with Associated for the past ten years.

KENNETH C. STONE is the new store manager at Elmore, Okla., for Republic Supply Co. Stone served with Republic in Oklahoma City, Houston, and Farmington, N.M., before assuming his new position. At the same time, **Daniel Martin** becomes sales representative at Vernal, Republic's first sales point in Utah.

JOHN S. MITCHELL is the new manager of the Huntington (W. Va.) office of Bradford Laboratories, Inc., a division of Hagan Chemicals & Controls, Inc., responsible for Bradford's operations in Ohio, eastern Kentucky, and West Virginia oilfields. Mitchell has been with the oilfield water consulting organization since 1954. Prior to his new appointment, he was located in Bradford, Pa., as a field service engineer in charge of water analysis and oilfield injection water treatment for New York and Pennsylvania.

T. H. Wakeman J. H. Webber

THOMAS H. WAKEMAN is the new manager of plate, structural, and bar sales of Kaiser Steel Corp., and **JACK H. WEBBER** succeeds him as Mid-Continent district sales manager. Wakeman will be located at the company's general sales offices in Oakland, Calif., and Webber will have offices in Tulsa. Wakeman will head the sales of Kaiser products manufactured at its integrated steel plant at Fontana, Calif. He joined Kaiser's sales division in 1950 as assistant to the manager of tubular sales at Oakland, and became sales representative at the Houston office in 1952. He was named Mid-Continent sales manager in 1954. Webber, who joined the company in 1945, became sales representative at Tulsa in 1950. From 1952 to 1954, he was manager of the Mid-Continent district, which at the time was largely concerned with the sales of line pipe through offices in Denver and Tulsa. After that, he returned to Oakland as assistant manager of tubular sales, his most recent position. The Mid-Continent district now includes sales offices in Denver, Houston, Tulsa, and Albuquerque, N.M., and is responsible for the sales of an expanded range of products.

OIL FIELD SALES & SERVICE, S.A., Maracaibo, Venezeula, and its subsidiary for Colombia, are sales representatives for Jet-Lube, Inc., Burbank, Calif., and Jet-Lube, Ltd., Wolverhampton, England. Jet-Lube's thread lubricating compounds are used on drill collars, drill tubing, tool joints, and all precision threads. Foreign sales for both Jet-Lube companies are handled through Val R. Wittich, Inc., New York. Oil Field Sales & Service, a subsidiary of U.S. Industries, Inc., sells and services products made by divisions of USI, and distributes complementary products made by other companies.

MURRELL D. LONG has been promoted to plant manager for Girdler Catalysts, Louisville (Ky.) unit of Chemetron Corp.'s chemical products division. **Charles G. Lamb** succeeds him as plant superintendent, a position he held since 1959. Long was a production engineer with Freeport Nickel Co. before joining Girdler Catalysts.

GEORGES de HENAU has joined Badger N. V., Dutch affiliate of Badger Mfg. Co., Cambridge, Mass., as executive sales engineer. He has been engaged in the engineering and operation of petroleum processing plants since 1926. He has served as a member of various technical and study missions involving petroleum for the Belgian government, as well as industrial and trade groups in Europe and the Middle East. In his new position, de Henau will be concerned with sales activities in Western Europe.

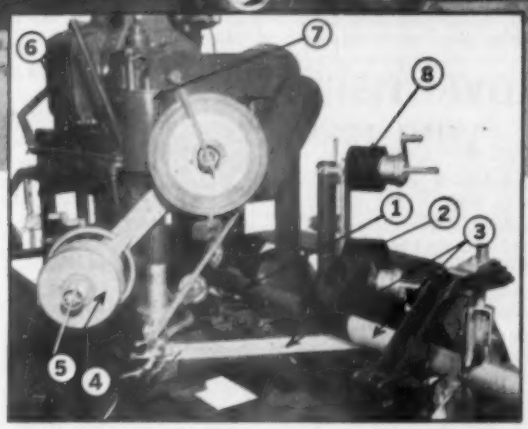
JAMES R. CRAINE has been promoted to assistant manager of the east-central sales district of Cooper-Bessemer Corp., at Mt. Vernon, Ohio. Craine, who joined the company as a sales engineer in 1952, was named branch manager of the Mt. Vernon sales office in 1958.

J. R. Craine W. C. McMahon

W. CLYDE McMAHON moves up to office manager, general sales, for Hughes Tool Co., Houston. He has been assistant office manager in the sales department since 1956. He joined Hughes in 1927.

JOHN W. ANTHONY has joined Armour Chemical Co. as a sales representative, with offices in Dallas. He was previously a consultant with a corrosion engineering company, and before that, was with Magnolia Petroleum Co., coordinating corrosion control activities in oil and gas production.

NEW TECHNIQUE ASSURES PERFECT ON-SITE COATING



Pipe (coming toward you) spins through machine . . . undergoes dynamic cleaning from twin-powered brush heads. Coating comes off brake-type tape drum. Outer wrapping runs through fast-gluing adhesive attachment.

1. Spinning pipe
2. Polyken tape coating
3. Outer wrap
4. Glue applicator
5. Stand-by outer wrap turret
6. Power brush heads
7. Glue tank
8. Stand-by tape turret

POLYKEN QUALITY PLUS UNIQUE APPLICATION METHOD MAKE TOP SITE-WRAP COMBINATION

Your protective coating results are only as good as the material you use and the way you put it on. And with Polyken tape . . . plus the special, new Polyken way of on-site application . . . you get a combination that really does a perfect job —*simply, speedily, economically.*

Simplicity? Right! The completely mobile machine sets up in an hour (knocks down in half that time), uses 6 men or less for continuous cleaning, coating, and wrapping. Speed? You can process up to 20,000 lineal feet a day, take 10-minute breaks to switch pipe sizes. Economy? Look at it this way: You get *quality* tape, properly applied by a high-speed *quality* process. The result can't help meaning more *dependable* coating for your dollar.

For the full story on both machine and tape, see your Polyken representative. It can mean maximum protection at minimum investment.

Polyken®

Experienced in modern PROTECTIVE COATINGS

THE KENDALL COMPANY
Polyken Sales Division

W. W. Hauser

L. S. Hadley

L. S. HADLEY is the new vice-president of Sinclair Crude Oil Co., with headquarters in Tulsa, and **W. W. HAUSER** succeeds him as secretary-treasurer of the company, with offices at Independence, Kan. In his new position, Hadley will supervise Sinclair Crude's division order department at Tulsa. In addition to his position as secretary-treasurer, Hauser has also been elected a director of Sinclair Crude. **Donald E. Winder** succeeds Hauser as assistant secretary and assistant treasurer for the company. Winder was formerly chief clerk for Sinclair Pipe Line Co., at Independence.

HAROLD J. FITZGEORGE is the new exploration adviser, and **HENRY K. HOLLAND, JR.**, the new producing adviser, for Mobil Oil Co., with offices in New York. Fitzgeorge, who joined the company in 1948 as a geologist, became district exploration superintendent at Midland, Tex., last year. Holland, who was most recently division operating superintendent at Denver, joined Mobil in 1945 as a junior engineer.

JOHN E. GROSS is the new regional executive of Mobil International Oil Co. for the Middle East, with headquarters in New York. He will be responsible for administering company interests in Iraq Petroleum Co. and the Iranian Consortium in Kuwait. Gross, who joined the company as an attorney in 1953, became administrative assistant to Mobil International's president last year. **Seward J. Kennedy** has been appointed regional assistant of Mobil International for northern and southeastern Europe, with offices in New York. He joined the company's office of general counsel in 1955.

HAROLD E. VAUGHN, Transcontinental Gas Pipeline Corp., has been elected president of the Natural Gas Men of Houston, a newly formed organization for men connected with the industry in either production, marketing, transmission, or distribution. Other officers of the new group are: **H. L. McDonald**, Pan American Petroleum Corp., first vice-president: **E. Rue Thomas**, Trunkline Gas Co., second vice-president: **Lonnie E. Crawford**, Humble Oil & Refining Co., third vice-president: **Jack Gale**, Transcontinental Gas Pipeline Corp., recording secretary; and **E. H. Fenner**, Shell Oil Co., treasurer.

E. L. Petree

E. Hosford

E. L. PETREE moves up to production coordinator for Gulf Oil Corp.'s domestic production operations headquarters at Houston, and **EUGENE HOSFORD** is the new manager of Gulf's Houston production district. Petree was formerly district production manager at Oklahoma City. In his new position, he will report to **H. F. Beardmore**, who was recently elected a vice-president and placed in charge of domestic production operations. Hosford succeeds Beardmore as Houston production district manager. Hosford was formerly operations coordinator for domestic production headquarters.

PHILIP E. COLDWELL moves up to vice-president of the Federal Reserve Bank of Dallas, succeeding **Morgan H. Rice**, vice-president and secretary, who is retiring. Coldwell has been with the bank since 1952, and has served as director of research since 1954.

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FRED B. WINDISCH has been named assistant manager of the TBA division in the marketing department of the Esso Standard division of Humble Oil & Refining Co., New York. He joined Esso in 1934 in its New Jersey division, and has been associated with TBA sales for nearly 25 years. He became general salesman in 1936, and shortly after that began a series of assignments for the New Jersey division's TBA department. He was assigned to the division headquarters at Elizabeth, N.J., in 1938, and moved to the TBA division at Esso headquarters in New York twelve years ago.

F. B. Windisch

G. J. Doyle

GERALD J. DOYLE has been appointed administrative assistant to **Millard E. Stone,** vice-president in charge of employee and community relations for Sinclair Oil Corp. and its subsidiaries. Doyle will handle special projects related to the organization's enlarged employee and community relations program. Doyle has been with Sinclair since 1954.

RICHARD W. CAMP, formerly president of Consolidated Gas Utilities Corp., has been elected vice-president of Arkansas Louisiana Gas Co., Shreveport, La. Consolidated Gas recently merged with Arkla Gas, and has become the Oklahoma-Kansas division of Arkla Gas. Camp will direct activities of this division from offices in Oklahoma City.

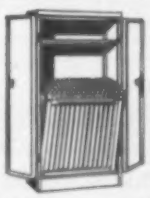
CARLTON D. WEAVER, WILLIAM R. SEATON, and **ALLAN S. PERRY** have been named assistants to the executive management of Ashland Oil & Refining Co., Ashland, Ky. Weaver, who joined the company in 1951, was most recently assistant to the manager of crude oil supply and pipelines. Seaton, who was formerly insurance manager of the company, will retain general supervision of the company insurance programs in addition to his new responsibilities in executive management. Perry, who will coordinate publicity and related activities for Ashland, joined the company in 1952 in the marketing division. In 1956, he became assistant merchandising manager for marketing, and later that year, was named editor of the company employee magazine.

ROLAND S. BOND, formerly president of Renwar Oil Corp., Dallas, is chairman, and **William V. Byrd,** a former Renwar vice-president, is president, of Palm Petroleum Corp., newly organized production and exploration company financed by the former owners of Renwar. Renwar was recently acquired by Tennessee Gas Transmission Co., Houston. Bond will be located in Dallas, and Byrd will direct operations from headquarters in Corpus Christi. **D. W. Forbes,** formerly Renwar secretary-treasurer, is a vice-president of the new company, and **Earl K. Wilson,** Renwar comptroller, is Palm Petroleum's vice-president and comptroller. Both vice-presidents will be located in Dallas. **H. N. Lyle** is the new company's vice-president in charge of operations, with offices in Corpus Christi. He was formerly production superintendent for Renwar. **Guy I. Warren,** who was also a Renwar vice-president, will be a member of Palm Petroleum's board, along with Bond, Byrd, Forbes, and Wilson. Byrd will be president and Lyle vice-president of a Palm Petroleum subsidiary, Tarpon Management Co., which will engage in contract management services from Corpus Christi headquarters.

T. F. WINGARD is the new assistant manager of Sinclair Pipe Line Corp.'s crude oil movements department, and **G. M. Stout** succeeds him as assistant manager of the products movements department. At the same time, **C. J. Snyder** becomes division chief dispatcher, products. The three men will be located at the company's main office at Independence, Kan. Stout was formerly Mid-Continent chief division dispatcher, and Snyder was Mid-Continent assistant chief division dispatcher. The crude oil movements and products movements departments will assume a greater work load, including oil dispatching and scheduling from the Great Lakes to the Gulf of Mexico, which were formerly handled at the field level.

G. E. RUFFIN has been named assistant manager of personnel and industrial relations in Shell Pipe Line Corp.'s head office at Houston. He has been assistant manager of the same department at Shell Oil Co.'s Martinez (Calif.) refinery since 1955. In his new position, he succeeds **J. A. Douglas,** who becomes staff manager for Shell Oil's administrative services in New York.

HOBSON MANN has joined King-Stevenson Oil Co., Oklahoma City, as a staff engineer in the drilling department. He has been a drilling and production engineer for Core Laboratories, Inc., Southern Production Co., and Sunray Mid-Continent Oil Co.

MAP  FILE

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How About a Hand for IOCC

TWO MONTHS AGO the Interstate Oil Compact Commission officially celebrated its 25th birthday. Two weeks from now its members will convene in Phoenix, Ariz., for their annual meeting.

This, then, is a belated salute to IOCC, and a suggestion—which we've made before, incidentally—that the industry as a whole, and the "top brass" in particular, give more active support to it, and show more enthusiasm for its efforts.

WHAT BRINGS THIS TO MIND is the missionary work of one of the industry's top executives during this week's API meeting in Chicago. He has been concerned for a long time that many of his colleagues in the upper echelons, and too many of the industry's general executives, are more inclined to pay lip service than attention to the commission, its background, and its purposes.

He buttonholed many executives, and informally urged them to demonstrate their support of IOCC by attending, as often as possible, the midyear and annual meetings, and to help spread the good word about its good work.

IOCC is, literally, a phenomenon in our modern world, and it certainly deserves every bit of encouragement that the industry can give it.

It has been hailed many times as a bulwark against federal control—something that is urgently needed in these times of creeping encroachment. It has done much good for the industry and the nation. The conservation practices it has generated and fostered, for example, are credited with making available something like 15-billion bbl. of oil that otherwise might have been wasted through negligence, carelessness, or willfulness.

Yet IOCC has no regulatory powers. It has no authority to dictate, condemn, or discipline. It can do nothing about anything, actually, except discuss it. Participation by member states is purely voluntary. They can do nothing singly or collectively against each other. Yet with logic, cooperation, persuasion, and understanding, IOCC has accomplished much in the conservation of one of our irreplaceable natural resources.

IT IS NOT THE INTENT of this comment, or of the industry executive who talked about IOCC in Chicago, to suggest that each and every meeting of the commission should be swamped with industry representation and participation. But it would be nice if many of the executives could attend the meetings being held in their necks of the woods. They could learn a lot, and IOCC too could benefit from their counsel. As we said, IOCC is purely and simply a cooperative effort—but it takes cooperation to make it truly effective.

ABRASIJET AND FRACTURING BY DOWELL BOOST PROFITS FOR MANY OPERATORS

More and more operators are reporting exceptionally good results from fracturing treatments preceded by Abrasijet*—Dowell's abrasive jetting service. With Abrasijet, notches can be cut to initiate fractures in the direction and plane desired. For example, it can be used to initiate horizontal fractures, reducing the danger of opening a vertical fracture into water or gas. In addition, this combination treatment often costs less than conventional perforating and fracturing.

In Kern County, California, a $15,000 Dowell treatment resulted in an 80 bopd flowing well and saved $20,000 in pumping equipment costs. The offset well is a 25 bopd pumper.

In Crane County, West Texas, an operator boosted potential from 7 to 171 bopd with Abrasijet and fracturing.

In Wyoming, an $1800 treatment with Abrasijet and fracturing made a 91 bopd producer out of a well that had been abandoned for two years.

In Illinois, an operator in Lawrence County, an area where formation water is a problem, realized a six-week treatment payout on a Tar Springs well. The combination treatment, Abrasijet and fracturing, cost only $1300.

Ask your Dowell representative to show you how this combination of Abrasijet and fracturing can help improve your production and hold stimulation costs at a minimum. For prompt service or detailed information, call the nearest Dowell office or station. Dowell services and products are offered from more than 150 offices and stations in the United States, Canada, Venezuela, Argentina and Germany. Dowell, Tulsa 1, Oklahoma.

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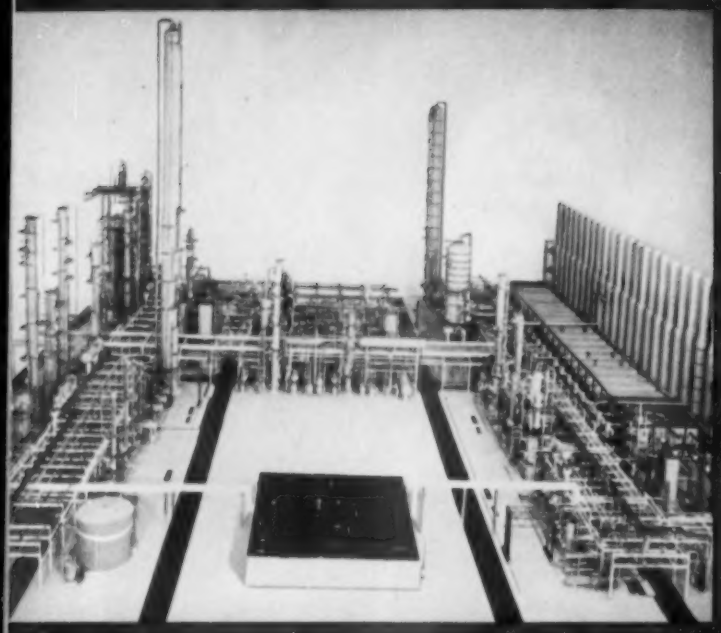

Mobil

FUTURE WORLD'S LARGEST is Socony Mobil Oil Company's ethylene plant at Beaumont, Texas. It is the first large plant in the U.S. to crack naphtha into olefins. Engineered by The M. W. Kellogg Company, as shown in this scale model, it is scheduled for completion by Kellogg by 1961. Capacity will be 380 million pounds annually of 99.9% purity ethylene.

This newest plant consists of steam pyrolysis, gas treating, and product recovery sections. It has been designed to handle simultaneously both liquid and gaseous feedstocks. In addition to ethylene, major products will include propylene, propane, a B-B product, gasoline, and fuel oil.

ICI

LARGEST OUTSIDE THE U.S. is the English Wilton Works of Imperial Chemical Industries, which now includes three olefin plants. Photograph shows Plant No. 3. All are the result of close engineering cooperation between Kellogg and I.C.I. Together, they represent a current output of 110,000 tons per year of high-purity ethylene, and a potential of 140,000 tons.

Plant No. 1, commissioned in 1951, was the first full-scale adoption of the then novel process of oil pyrolysis developed in Kellogg's laboratories. Its success led to the addition of Plant No. 2 in 1956, and then to No. 3—representing a 60% increase in olefin capacity—in 1959.

Whether your approach to ethylene is through the steam pyrolysis of hydrocarbons or the recovery of ethylene from gas mixtures, Kellogg has developed processes which can assure the optimum investment, operating costs, product purity, and yield. For more information about Kellogg's 2-billion-pound background in engineering and/or building ethylene plants, write for a copy of "Olefin Plants" Kelloggram.

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